



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

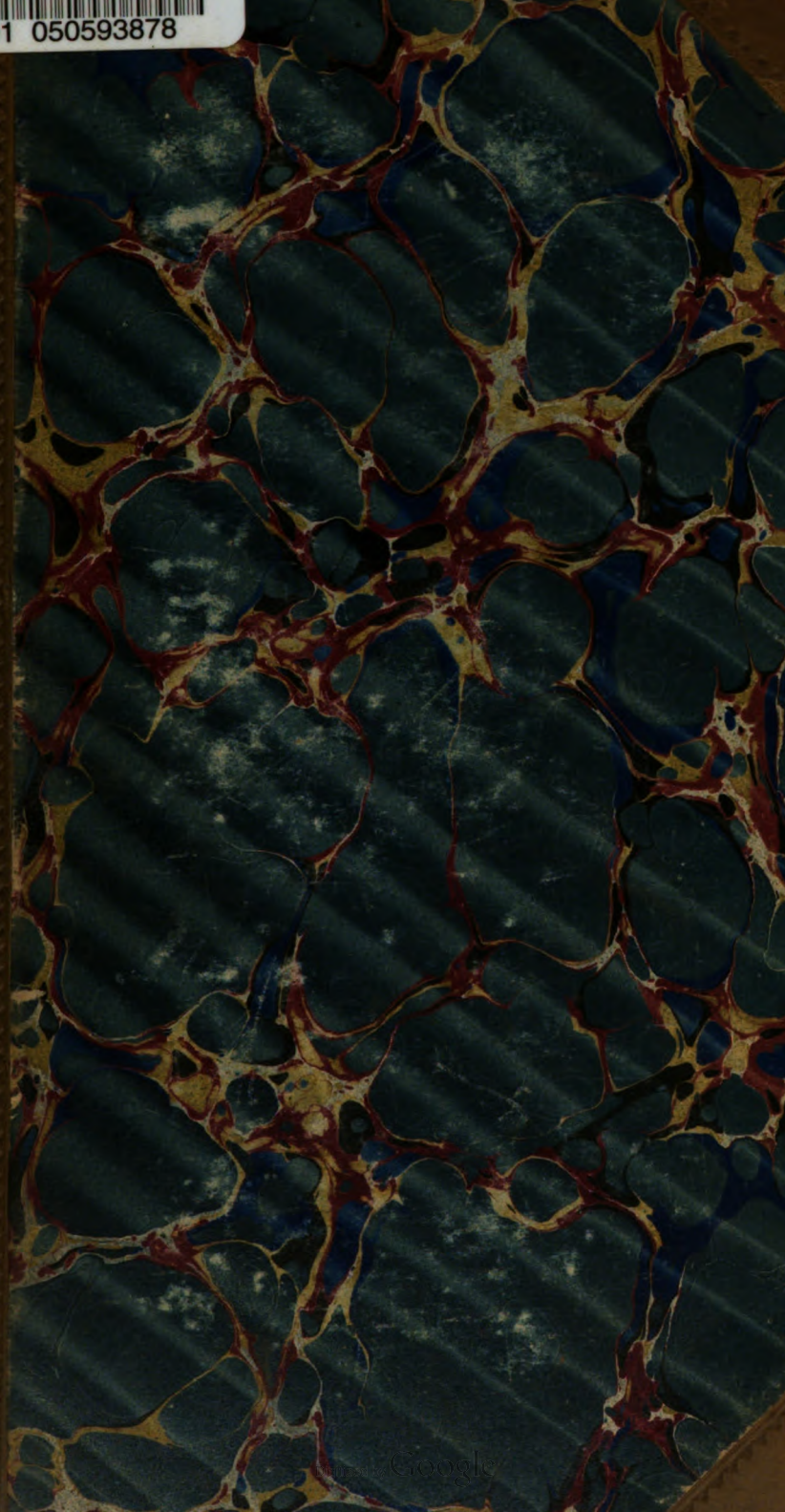
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



32101 050593878



Library of



Princeton University.

Presented by

Mrs. Orlando Franklin Weber















ANNALS  
OF  
*AGRICULTURE,*  
AND OTHER  
USEFUL ARTS.

---

VOL. XXXVII.





ANNALS  
OF  
AGRICULTURE,  
AND OTHER  
USEFUL ARTS.

---

COLLECTED AND PUBLISHED BY

*ARTHUR YOUNG, ESQ. F. R. S.*

SECRETARY TO THE BOARD OF AGRICULTURE,

Honorary Member of the Societies of Dublin, Bath, York, Salford, Odiham, South Hants, Kent, and Essex; the Philosophical and Literary Society of Manchester; the Veterinary College of London; the Economical Society of Berne; the Physical Society of Zurich; the American Society of Massachusetts; the Palatine Academy of Agriculture at Manheim; the Imperial Economical Society established at Petersburg; the Royal and Electoral Economical Society of Celle; Associate of the Society of Agriculture at Paris; and Corresponding Member of the Royal Academy of Agriculture at Florence; and of the Patriotic Society at Milan.

---

VOL. XXXVII.

---

Bury St. Edmund's:

PRINTED, FOR THE EDITOR, BY J. RACKHAM, ANGEL HILL;

and sold by

RICHARDSON, ROYAL EXCHANGE, LONDON.

1801.





# CONTENTS

OF THE

## THIRTY-SEVENTH VOLUME.

	PAGE
CULTIVATION of Rhubarb. By the Rev. T. Martin, Professor of Botany at Cambridge - -	1
An Account of the Net Produce of the Customs, Excise, Stamps, Incidents, and Duties pro Annis 1793 to 1800 inclusive, in the Years ended January 5, 1800, and January 5, 1801 - -	12
Meeting of the Dublin Society, Jan. 22, 1801 -	21
Land, &c. for the Poor - -	32
Means of allotting Land to the Poor - -	35
Outline of a Plan to ascertain and define the Diseases of Horned Cattle and Sheep, &c.: With Remarks on the Necessity and Utility of the Measure. By W. P. Whyte, Esq. Worcester - -	47
Premiums offered by the Board of Agriculture, for 1801 - - - -	63
Culture of Potatoes. Communicated by Sir William Pulteney, Bart. M. P. - - -	77
Remarkable Culture of Potatoes - - -	87
Advice of Counsel concerning the Power of Magistrates in suppressing Riots, taken by the Grand Jury at Taunton Lent Assizes, 1801 - -	90
Prices of Corn which govern Exportation for April, 1801 - - - -	94
Average Prices of Corn for April, 1801 - -	95
On the Wages of Labourers in Husbandry - -	97
The Shoot in Cattle - - -	112
Proposal for a Commutation of Tithe - -	119
Oxen much inferior to Horses - - -	124
Extract from Bygge's Travels in the French Republic - - - -	129
Somerfet. Taunton Lent Assizes, 1801 - -	133

RECAP  
9400  
125  
V.37



	PAGE
Experiment Wether Hog Sheep - - -	138
The Cottager's Garden Calendar - - -	145
Second Report of the Committee of the House of Commons appointed to consider of the present high Price of Provisions - - -	148
Potatoes - - - - -	169
Draining - - - - -	173
Extract of an agricultural and statistick Journey of Mr. Birchwold, Gentleman of the Bedchamber to the King of Denmark, Bailiff of several Bailiwicks, and Owner of Gudumlund, a considerable Estate in Jutland - - -	175
Average Prices of Corn for May, 1801 - - -	191
Woburn Sheep Shearing, 1801 - - -	193
The first private Bill of Enclosure ever passed - - -	226
Observations on the Means of enabling a Cottager to keep a Cow by the Produce of a small Portion of Arable Land. By Sir John Sinclair, Bart. - - -	231
Fourth Report from the Committee appointed to consider of the present high Price of Provisions - - -	250
Fifth Report of Ditto - - - - -	253
On Clay and Marle. By Mr. Josiah Rodwell of Livermere, near Bury - - -	258
Some Notes on Farm Buildings - - -	266
Ploughing in Green Crops - - -	270
Grasses - - - - -	271
Asses - - - - -	272
Experiments on the Winter and Summer Support of Sheep, for the Year 1800. By the Editor - - -	273
On Sheep Shearing. By Mr. Price, of Appledore - - -	276
Remarks upon Sheep Shearing at Romney Marsh. By Mr. Culley - - - - -	280
Condition of the Poor at different Periods - - -	285
Average Prices of Corn for June, 1801 - - -	287
An Essay on the Food of Plants and the Renovation of Soils. By John Ingenhouz, Body Physician to their Imperial and Royal Majesties, F. R. S. - - -	289
An Abstract of the Crops produced in the Years 1795 and 1800 on the Estates belonging to his Grace the Duke of Bedford, under the Care of John Farey - - - - -	347

# CONTENTS

vii

PAGE

On the Connexion between the Rent of Land and the Price of it's Produce	-	-	-	349
Cottage Farms in a Chalk Country	-	-	-	352
Suffex Agricultural Society	-	-	-	361
On Kilndrying Wheat	-	-	-	371
Machine for cutting Corn	-	-	-	374
Cows	-	-	-	376
Remarks on the Wiltshire and South-Down Sheep.				
By Mr. Thomas Davis, of Longleat	-	-	-	378
Average Prices of Corn for July, 1801	-	-	-	383
Warping in Italy (with a Plate)	-	-	-	385
Devonshire Cattle, &c.	-	-	-	432
Sheep Feeding. Sheep Folding	-	-	-	437
Sheep	-	-	-	438
Coppices	-	-	-	444
Expences of a Farm in Norfolk	-	-	-	447
Lace Making	-	-	-	448
Rice used by the Poor	-	-	-	450
River Weeds. Timber in Bogs	-	-	-	451
New Lay. Rowen	-	-	-	452
Cocksfoot Grass	-	-	-	453
Laying Down	-	-	-	454
Pare and Burn	-	-	-	455
Remarks on the Disposition of Sheep to fatten, on Horse Tying, and Vale of Evelham Course of Crops. By Mr. T. Davis, of Longleat				456
Observations registered in the Course of a Visit to the Right Honourable the Earl of Coventry, at Croom, Worcestershire. By the Reverend Arthur Young	-	-	-	465
Timber	-	-	-	506
Common Thistle. Watered Meadow	-	-	-	508
Wells	-	-	-	509
Wiltshire Sheep. Irrigation	-	-	-	510
Red Willow. Miscellaneous Notes on Cattle	-	-	-	512
An Inquiry into the State of the Cottagers in the Counties of Lincoln and Rutland. By Mr. Ro- bert Gourlay	-	-	-	514
Suffex Western Agricultural Society	-	-	-	550
Bedfordshire Agricultural Society	-	-	-	553
Oriental Plants cultivated in the West Indies	-	-	-	557

	PAGE
A Proposal for the Establishment of Friendly Societies by Act of Parliament -	562
Notes on Sheep -	571
Average Prices of Corn for August, 1801 -	573
Average Prices of Corn for September, 1801 -	575
An Inquiry into the State of the Cottagers in the Counties of Lincoln and Rutland, by Mr. Robert Gourlay, continued -	477
Notes on Sheep -	600
Measures of the Teeswater Ox shown at Bury Fair, October 1801 -	602
Draining -	603
Suffolk Hogs. Plantations for Sheep -	606
Plantations -	607
Prices of Provisions, &c. Price of Labour -	608
Deer. Notes on viewing Mr. Wall's Lands in Romney Marsh, 1797. By an Essex Correspondent -	612
Note on Potatoes, May 13, 1788 -	613
Sermon to a Country Congregation -	614
On the Means of promoting the Spirit of Improvement in a Country. By Sir John Sinclair, Bart. -	634
Premiums offered by the Manchester Agricultural Society for the Year 1801 -	647
Average Prices of Corn for October, 1801 -	663

---

# ANNALS OF AGRICULTURE.

---

## CULTIVATION OF RHUBARB.

BY THE REV. THOMAS MARTIN,

*Professor of Botany at Cambridge.*

SIR,

THE late imperious conduct of the court of Petersburg towards this country has put me upon reminding the public, through the channel of your work, that rhubarb, for which it is said 200,000*l.* are annually sent abroad, great part of it to Russia, may easily be cultivated in Great Britain; and, with proper attention to the curing, will be equal in quality to the best that is imported.

It is now near forty years since it was ascertained beyond a doubt, that the *rheum palmatum* of Linneus is the true Tartarian rhubarb. Dr. Mounsey introduced it from Petersburg about the year 1762. The seeds were quickly dispersed about the island, but particularly in Scotland, where Sir Alexander Dick, then President of the College of Physicians at Edinburgh; Dr. Hope, Professor of Botany there; the Duke of Athol, and others raised considerable quantities, cured

VOL. XXXVII. No. 209. B

the roots, and found them to be equal in every respect to the best foreign rhubarb. At the same time I cultivated it in the Botanic Garden at Cambridge, from Dr. Mounsey's original seeds, and Mr. Miller and several other persons raised them in England.

Soon after this the truly patriotic Society for the Encouragement of Arts, Manufactures, and Commerce, at London, exerted itself with much ardour and some success in promoting the cultivation of the true rhubarb in Great Britain. Sir Alexander Dick, Sir William Fordyce, Mr. Robert Davis, Mr. John Ball, Mr. William Hayward, the Rev. James Stillingfleet, Mr. Jones, of Fishstreet Hill, and others were honoured with the gold medal of the society, and gave ample accounts of the culture and method of curing the root, as may be seen in their 'Transactions.'

The Bath Agricultural Society also took up the subject, and some valuable papers on British rhubarb may be found in their useful publication.

A prejudice having been taken up against rhubarb of British growth, on account of a supposed inferiority of it to the foreign; it will be necessary to do away that prejudice before the culture of it be recommended.

That this island is not too cold for it, appears from the success with which it has been cultivated in Scotland by Sir Alexander Dick,



Dr. Hope, and the Duke of Athol. If it meet with any difficulty here, it must be from the moisture of our climate; a dry soil therefore should be chosen for it, such as the sandy loams about Woodbridge, in Suffolk, and Sandwich, in Kent, which are peculiarly adapted to carrots. A barren sand is unfit for it, and a tenacious clay is still worse.

The chief obstruction to giving the root here a quality equal to foreign rhubarb appears to be the difficulty of curing it properly: but this has been in a great measure got over, as well as we could expect, considering that the cultivators have not hitherto possessed places proper for drying and curing the roots; and, no doubt, will be fully conquered by farther experience, whenever such encouragement shall be given to the culture of this useful plant at home as may make it worth while to have buildings constructed fit for the purpose.

But that the root, as it has already been cured here, is but little, if at all, inferior to foreign rhubarb, will appear from the following testimonies.

Dr. Hope, in the year 1784, relates, that most of the apothecaries in Edinburgh then used no other rhubarb than what was raised in Scotland; that for several years there had been no other used in the Royal Infirmary; and that when a sound root was well dried and properly dressed, it was in no respect inferior to what came from Russia.

Dr. Lettsom, in the same year, having tried British rhubarb on himself and about forty children, concludes that the exotic root possesses no one quality which our's does not contain.

Specimens of British rhubarb underwent a severe trial at Bath, by three eminent physicians there. Dr. Falconer reports, that if it should be allowed to be inferior to the foreign, which is perhaps doubtful, this inferiority is probably owing to such circumstances as are in the power of attention and industry to obviate; and that this might be done in great measure by attending to the age of the plant when taken up; to the root being cut transversely, rasped on the outside, having the sappy parts cut out, being dried quickly, and kept some time before it is used.

From a great number of trials Dr. Parry concluded, that one of the specimens was fully equal in it's purgative quality to the Turkey.

Dr. A. Fothergill remarks, that the foreign rhubarbs, being more sightly to the eye, are more marketable than the English; but that much artifice is used to render them such. That it behoves the Faculty to examine whether the griping effects complained of may not some times proceed from the Dutch yellow, extracted from buckthorn berries, with which the foreign root is commonly coloured. That the foreign rhubarb may acquire some advantage from

soil, climate, culture, and the mode of drying; but much more, probably, from it's superior age.

These trials and remarks are detailed in the appendix to the third volume of 'Bath Papers.'

Mr. Ball, a surgeon at Williton, in Somersetshire, sold eighty pounds of rhubarb of his own raising to a druggist in Bristol; used no other sort himself, and always found it to answer in every respect.

The Reverend James Stillingfleet, of Hosham, in Yorkshire, for fifteen years and upwards used the English rhubarb as a constant physic for the poor of his parish and neighbourhood, and never found it to fail of it's proper effects.

Mr. Jones, of Fishstreet Hill, who has cultivated rhubarb with great spirit and success, is of opinion, that the prevailing prejudice for foreign commodities is of infinitely more consequence than any obstacle that can impede it's general cultivation; and that British rhubarb, at six or seven years' growth, properly cured, will possess all the virtues which the most sanguine can desire. The physicians of Guy's Hospital were unanimous in their approbation of Mr. Jones's rhubarb, and he had an order for as much as he could produce for the use of the hospital.

These accounts, and many more, are given at large in the 'Transactions of the Society of Arts,' vol. VIII. xv. xvi. &c.

One great objection with the cultivator is,

that he must wait at least four years, or, as some think, six or seven, before the roots will be fit for use : but with respect to the consumer, it may not be amiss to observe, that rhubarb may be administered with success, when younger, in it's fresh state, or undried, by bruising half an ounce of the root, and boiling it in half a pint of water till it is reduced to one quarter of a pint. The Tartars are said to hold the recent root in high estimation : and Dr. Hope remarks, that the succulent root is more purgative than the dried ; and, therefore, the more recent it is, the better.

The seeds have the same medicinal property with the root. In general it appears that twenty grains of these have a purgative quality equal to thirty grains of the root ; that they have more of the aromatic matter, and less of the astringency.

The accounts here given appear sufficient to give us well-grounded hopes that British rhubarb might fully supersede the necessity of importing this drug from abroad : a consideration of no small importance at all times ; but especially when the ports of Russia are shut against us, and not only our merchant ships detained, contrary to the faith of treaties, but our sailors driven up into the country and made prisoners, in a time of profound peace with that power.

I shall therefore give some short directions for the culture and curing of rhubarb at home.

Sow the seeds broadcast, on a warm bed of good, light earth, well worked, in open weather, from the last week in February to the end of April; treading them in and raking the bed smooth, as is practised for carrots and parsneps. Some recommend sowing on a hot bed; but that is necessary only on cold soils, and in very early sowing: they succeed best when sown in the open ground. In case of frost, straw or haulm may be thrown over the bed, or cucumber frames may be set upon it: but if seed be plentiful, and what is sown do not appear in three weeks, sow again; and in dry weather, when it is not cold, water the bed. If the bed be made with new stable dung, covered a foot thick with good soil, it will prevent the rising of earth worms, which in a moist season frequently destroy the young plants.

In a fortnight or three weeks, if the weather prove mild, the plants will appear. When these are four or five inches high, and have as many leaves, or when they are about the size of young cabbages, or smaller, take them up carefully, to preserve the top root, and transplant them into good, rich earth, well dug or ploughed, and very fine and clean. Place them in rows four feet asunder every way, watering them, to settle the earth to the roots, and repeating the watering, if the weather prove dry, till the plants have taken root. But to avoid this trouble and



expencc, transplant, on cloudy or showery days, during the summer and autumn. Keep the crop clean by hand or horse hoeing ; and when the leaves decay in autumn, draw the earth over the plants, or throw the scrapings of the alleys over the crowns. In spring do the same, or give them a top dressing of fresh mould, or any very rotten manure.

Some persons remove the plants into a nursery before they plant them out where they are finally to remain ; but this does not seem to be necessary : it may be practised, however, where the ground for the crop is not in readiness. It is said that the plants which are left in the seed bed will be stronger and forwarder than those which are transplanted, provided they be kept clean, and the ground between them be well dug in spring and autumn.

The seeds may be sown in autumn, and in that case the young plants may be removed in the spring ; but these require more care to carry them through the winter, which when severe will destroy them.

In the culture of rhubarb the difficulty lies in bringing the plants through the first season. Earth worms and slugs are their mortal enemies, and they are more subject to the fly than even the turnip. The seedling plants ought to be looked over every evening, but especially very early in the morning, to pick off the slugs.

Quickness of growth is the best security against the fly ; and this is most effectually promoted by goodness of soil and frequent waterings, if the weather be dry. In a sultry sun the seed bed may require to be shaded. After the first year, rhubarb is hardy and easy to cultivate. The quality of the root is best on fresh, sound land, unmanured, provided the turf and weeds be killed, and the wire worms destroyed.

When plants are once obtained, rhubarb may also be increased by offsets taken from them at three or four years old, or from the crown of the roots when taken up for use. They may be planted, either in spring or autumn, at four feet distance or more ; and in four years will be found not inferior to plants raised from seed.

This is the period at which the roots may be taken up for medical use, but they will be firmer and better at seven or eight years' growth ; some persons recommend even eleven or twelve. The best mode of proceeding seems to be, to thin the plantation gradually and regularly by taking up alternate rows and plants as they shall appear to be fit for use ; and in the mean time the intermediate ground may be applied to many horticultural purposes.

Autumn, or the beginning of winter, seems the most proper season for taking up the roots ; from the time that the leaves are decayed till hard frost sets in.

In drying and curing the roots the following process may be observed. Clean them well from the dirt with a hard brush as soon as they are dug up, or, if necessary, wash them in water; but in that case do not let them continue in the water, but dry them as soon as possible. Cut off all the fibres and small roots, and let not a particle of the bark be left on the larger ones. Cut these transversely into pieces of about two inches thick, and dry them with as much quickness as you reasonably can. The Tartars place them on boards, turning them three or four times a day, that the yellow viscid juice may incorporate with the substance. In four or five days they cut a hole through every piece, and expose them to the air and wind, but sheltered from the sun. Thus they are dried in two months.

The Chinese dry the pieces on stone slabs, under which fires are kindled. They keep continually turning them; and then, having perforated them, they suspend them on lines to finish the drying.

In Britain they have been commonly strung on a packthread, a hole having been made through the middle, and then suspended in the warm air of a kitchen, laundry, stove, or malt-house, or over a baker's oven, till all the superfluous moisture is exhaled, to prevent their becoming mouldy or musty. After this they may be dried more at leisure in the air under

## AGRICULTURE.

11

cover. They should then be rasped, and all the discoloured outside be taken off; and, to make them marketable, may be rubbed over with a very fine powder which the smaller roots will afford. Some persons prefer gradual, slow drying, but the general voice is for expedition in this process. If rhubarb should be cultivated here on a large scale, either a malt house will be converted to this purpose, or proper rooms, furnished with stoves, built for curing the roots.

It is certain that much of the true rhubarb produced in Britain has not been cured so well as the foreign. The Duke of Athol's, however, was thought nearly, if not quite equal to the Russian, by eminent druggists and medical practitioners in London; and his Grace afterwards produced specimens of still superior quality to those upon which this judgment was formed. And the rhubarb of Mr. Jones's growth was approved and adopted at Guy's Hospital.

It appears, therefore, upon the whole, that there is no difficulty in the culture or preparation, no objection to the quality of British rhubarb, but what may easily be overcome with attention and perseverance. And there is no doubt but that the crop would amply repay the cultivator, as well as be a considerable saving to the nation.

THOMAS MARTIN.

*An ACCOUNT of the Net Produce of Customs, Excise, Stamps, Incidents, and Duties pro Annis 1793 to 1800 inclusive, in the Years ended Jan. 5, 1800, and Jan. 5, 1801.*

Acts of Parliament Geo. III. An. reg. 37. 13. 15	Cap. 37. 13. 15		In the year ended 5th January, 1800.			In the year ended 5th January, 1801.		
			£.	s.	d.	£.	s.	d.
27.	37.	Consolidated Customs, after deducting 29,169l. 18. 5d. by act 37 Geo. III. Cap. 15. to be carried to account of duties anno 1796, being the computed quarterly saving to the public on account of the reduction in the drawback on the exportation of sugar	3,291,169	5	6½	2,689,124	11	0½
34.	20.	Consolidated duties of excise	6,894,002	10	0	5,809,289	0	0
34.	33.	<i>Revised.</i> —By 34 Geo. III. c. 20. out of duty on paper, 1794, in lieu of duties then repealed, at 18,750l. per qr.	75,000	0	0	75,000	0	0
34.	33.	<i>Ditto</i> — By ditto, cap. 33, out of ditto on spirit licences, anno 1794, in lieu of ditto, at 9,000l. per ditto	14,750	0	0	4,750	0	0
37.	13.	Consolidated duties on stamps	1,075,118	14	6	1,065,379	0	0
31. 33	1. 28	Compositions for stamps per Bank of England	12,000	0	0	12,000	0	0
33.	28	<i>Revised.</i> —By act 33 Geo. III. cap. 28, out of stamps on bills and receipts, anno 1793, in lieu of duties then repealed, at 32,150l. per quarter	128,600	0	0	128,600	0	0
36.	52.	<i>Ditto</i> — By ditto 3 Geo. III. cap. 52, out of ditto on legacies, 1796, in lieu of ditto, at 10,259l. 13s. per ditto	41,079	0	0	41,079	0	0
36.	125	<i>Ditto</i> — By ditto, cap. 125, ditto on hats, 1796, in lieu of ditto, at 2,369l. 17s. 9d. per ditto	9,603	8	9	9,479	11	0
37.	19.	<i>Ditto</i> — By ditto 37 ditto, cap. 19, ditto on deeds, 1797, in lieu of ditto, at 39,151l. 5s. per ditto	—	—	—	156,605	0	0
			11,541,122	18	9½	9,991,806	2	0½

# AGRICULTURE.

13

## INCIDENTS.

37.	18.	<i>Reserved.</i> —By act 37 Geo. III. cap. 18, out of consolidated letter money, being the computed quarterly produce of that duty prior to 1795, at 102,639l. per qr.	410,536	0	0	410,536	0	0
39.	65.	<i>Ditto.</i> — Out of consolidated duty on salt, in lieu of duties then repealed, at 101,551l. per quarter, by act 38 Geo. III. cap. 89; and at 93,551l. per quarter, by act 39 Geo. III. cap. 65	406,120	0	0	374,120	0	0
38	40. 41.	<i>Reserved</i> — from duties consolidated by acts 38 Geo. III. cap 40 and 41, in lieu of duties then repealed, Out of { Houses and windows, anno 1798, at 81,975l. per quarter Ditto on account of commutation duty, at 128,750l. per quarter Inhabited houses, anno 1798, at 37,150l. per quarter } Male servants, ditto, at 23,250l. ditto Riding horses, ditto, at 56,500l. ditto Four and two-wheeled carriages, anno 1798, ditto	327,900	0	0	327,900	0	0
			552,117	7	3½	515,000	0	0
			148,600	0	0	148,600	0	0
			93,000	0	0	93,000	0	0
			106,000	0	0	106,000	0	0
			100,000	0	0	195,164	4	10½
			96,333	19	1½	56,115	3	1
			609	12	3	618	8	11
			472	16	8	3	13	4
		<i>Seizures</i>						
		<i>Profers</i>						
		<i>Compositions</i>						
		Carried forward	2,381,358	15	4½	2,216,177	10	2½

## Account of the Net Produce of Customs, &amp;c. continued.

Acts of Parliament Geo. III. An. reg. Cap.	Incidents continued.	Brought forward	In the year ended 5th January, 1800.		In the year ended 5th January, 1801.	
			£	s	£	s
	Alienation duty	-	3,381	858	15	4½
	Sixpence per lib. on pensions	-	1,839	20	00	-
	Shilling ditto on salaries	-	45	720	0	0
	Hawkers and pedlars	-	43	100	100	2½
	Hackney coaches and chairs, anno 1711 and anno 1784	-	5	897	00	00
	Rent of the clergy	-	23	700	00	00
	Fruits of ditto	-	3	814	8	6
	Rent of a lighthouse	-	9	908	4	6½
	Lottery licenses	-	6	13	4	-
	Rent of alum mines	-	970	100	00	00
	Appraisals.—Waggons	-	960	0	0	0
	Carts	-	2	00	00	00
	Male servants	-	—	—	—	—
	Female servants	-	—	—	—	—
	Salt, anno 1787	-	—	—	—	—
	<b>DUTIES PRO ANNO 1793.</b>		2,419	770	15	9½
31. 33.	British spirits, anno 1791	-	108	916	0	0
33.	Game duty	-	27	673	4	0
			2,366	352	0	11
			85	517	0	0
			22	950	0	0



# AGRICULTURE.

15

31. 33.	195. 28	Surplus of bills and receipts, after reserving the average produce as aforesaid	87,891	19	3	98,394	0	0
38.	40. 41.	Retrospect out of duties consolidated by act anno 1798, cap. 40 & 41, in lieu of 10l. per cent. 1791, then repealed	89,605	12	6½	86,799	7	6
			314,086	6	7½	294,160	7	6
DUTIES PRO ANNO 1794.								
31. 34.	15. 4.	Sugars, anno 1794	60,370	9	1½	126	15	10½
31. 34.	15. 4.	Foreign spirits	165,021	0	0	167,808	0	0
	2.	British ditto, 1794	110,041	0	0	84,735	0	0
	3.	Foreign ditto	156,935	17	5	173,458	0	0
	27.	Glass	43,121	0	0	47,428	0	0
	15. }	Bricks and tiles (customs)	3	3	3	13	11½	
	51.	Ditto (excise)	43,270	0	0	56,638	0	0
14.		Slates and stones	12,777	9	11	14,589	16	4
	14.	Attornies' articles	21,979	18	0	22,787	0	0
	20. }	Paper (customs)	3,277	3	5	781	7	7½
		Surplus of paper (excise) after reserving the average produce as aforesaid	75,143	0	0	86,917	0	0
			689,433	6	1½	655,297	3	9½

*Account of the Net Produce of Customs, &c. continued.*

Acts of Parli- ment Geo. III.	Cap.		In the year ended 5th January, 1800.		In the year ended 5th January, 1801.	
An. reg.			£.	s. d.	£.	s. d.
DUTIES PRO ANNO 1795.						
11.		British spirits	106,603	0 0	87,167	0 0
12.		Foreign ditto	156,717	6 6½	173,113	0 0
19.		Wines	557,178	0 0	496,428	0 0
		Sweets	7,751	0 0	7,369	10 0
13.		Cocoa	22,187	0 0	30,136	0 0
55.		Stamps	39,471	10 6	36,623	0 0
63.		Ship policies	148,693	2 6	130,521	0 0
49.		Hair powder certificates	131,881	13 8	95,695	0 0
55.		Receipts	8,537	7 8	9,690	0 0
20.		Fruits	105,796	18 7½	97,464	17 1½
20.		Coals	21,326	2 5	11,569	14 2
13.		Tea	259,538	10 0	228,665	0 0
59.		Spirit licenses	15,750	0 0	8,250	0 0
18.		<i>Reserved, out of consolidated letter money, the computed quarterly increase of revenue, by reason of the restriction in franking, by act 35 Geo. III.</i>	40,000	0 0	40,000	0 0
37.			1,611,424	11 11½	1,452,691	11 3½

# AGRICULTURE.

17

DUTIES PRO ANNO 1796.			
13.	Tobacco, &c.	186,183	0 0
17.	Horse dealers' licenses	1,559	3 3
36.	Wine (excise)	2,500	0 0
	Ditto (customs)	526,103	4 1½
	Sweets	8,014	0 0
52.	Surplus of legacies, after reserving the average produce as aforesaid	77,165	1 3
125.	Ditto hats, ditto	33,162	14 3
38.	Reserved—by act at 86,500l. per quarter	106,000	0 0
	38 Gto. III cap. Ditto on ditto for husbandry, at 23,750l. ditto	95,000	0 0
	41, in lieu of duties, '796, then repealed Out of	68,929	17 3
	Duties consolidated, anno 1798, on account of 10l. per cent. 1796, at 20,047l. 10s. per quarter	81,151	2 7½
39.	Computed quarterly saving by reducing the allowance for waste on salt	32,000	0 0
37.	Taken out of consolidated customs, being the computed saving on account of the reduction in the drawback on the exportation of sugar	116,676	5 8
		1,334,444	8 4½
		1,315,421	9 6½

*Account of the Net Produce of Customs, &c. continued.*

Acts of Parlia- ment Geo. III.	An. reg.	Cap.	DUTIES PRO ANNO 1797.	In the year ended 5th January, 1800.		In the year ended 5th January, 1801.	
				£.	s. d.	£.	s. d.
37.			Pepper	161,893	8 10½	132,553	7 5
			Wrought plate	19	3 6	86,326	9 0
			British spirits	107,535	0 0	172,839	6 8
			Foreign ditto	157,964	16 0½	69,917	0 0
			Auctions	50,844	0 0	573,748	0 0
			* Surplus of deeds, after reserving the average produce as aforesaid	—	—	7,375	0 0
			Cocoa	5,999	0 0	5,958	13 9½
			Clocks, &c. (arrears)	14,966	2 5½	53,027	0 0
			Stage coaches	69,739	0 9	114,299	19 0
			Sugar, &c	184,766	4 10½	29,925	0 0
38.			Bricks	23,033	0 0	289,869	0 0
			Tea	310,255	3 4	35,750	0 0
			Spirit licenses (cap. 17)	59,000	0 0	500	0 0
			Ditto (cap. 102)	7,750	0 0	—	—
			Surplus of consolidated duties on horses for riding, &c. after re- serving the sums as directed by act 38 Geo. III. cap. 41	79,922	11 5½	58,517	2 2
			Ditto on ditto for husbandry, ditto by ditto	174,940	4 3½	168,721	11 10½
			Ditto on male servants, 1798, ditto by ditto	47,577	1 11½	41,689	10 6
			Ditto on four and two-wheeled carriages, ditto by ditto	—	—	14,138	13 0
			Ditto on houses and windows, 1798, ditto by ditto, cap. 40	304,497	19 7½	468,438	3 7½
			Ditto on inhabited houses, 1798, ditto by ditto	18,980	15 0½	39,498	8 5

# AGRICULTURE.

19

37.	18.	Ditto letter money, after ditto by act 37 Geo. III. cap. 18	265,444	0	0	265,444	0	0
38.	40. 41.	Ditto 10l. per cents. anno 1793	—	—	—	—	—	—
37.	69.	10l. per cents. on assessed taxes (arrears)	52,126	5	4½	34,362	5	5½
37.	19.	*Deeds	687,460	11	8	—	—	—
<b>DUTIES PRO ANNO 1798.</b>								
38.	53.	Armorial bearings	2,784,114	9	3½	2,642,708	4	7½
38.	42.	Tea	29,732	0	8	25,021	0	0
38.	92.	Spirit licenses	131,889	16	8	143,908	0	0
38.	89. 65.	Surplus of duties on salt, after reserving the sums as directed by act 38 Geo. III. cap. 89	124,710	0	0	87,500	0	0
<b>DUTIES PRO ANNO 1799.</b>								
39.	63.	Coffee and sugar	426,204	10	6½	473,781	19	3½
39.	107.	Duty on small notes	712,576	7	10½	750,207	19	3½
39.	107.	Canal and dock duty	243,036	15	9	198,005	12	0
39.	107.	Compositions for stamps per Bank	9,821	18	0	21,538	0	0
39.	107.	Compositions for stamps per Bank	7,612	12	0	14,918	17	7½
<b>DUTIES PRO ANNO 1800.</b>								
40.	23. }	British spirits	260,491	5	9	186,462	9	7½
40.	23. }	Foreign ditto	—	—	—	52,227	0	0
40.	23. }	Tea	—	—	—	120,555	23	4
40.	23. }	Tea	—	—	—	121,270	0	0
40.	23. }	Tea	—	—	—	284,052	23	4

C 2

*Account of the Net Produce of Customs, &c. continued.*

	In the year ended 5th January, 1800.			In the year ended 5th January, 1801.		
	£.	s.	d.	£.	s.	d.
Totals of customs, excise, stamps, and incidents prior to the year 1793	13,961,093	14	7½	12,358,158	2	11½
Add proportionate part of duties on sugar now annually granted	1,741,317	13	2½	1,236,455	1	1
Additional duty on malt ditto	222,145	0	0	155,986	0	0
Duty on tobacco ditto	261,948	0	0	443,940	0	0
Total of duties pro anno 1793	15,586,504	7	10	14,139,453	4	0½
Ditto 1794	314,086	6	7½	294,260	7	6
Add proportionate part of duties on sugar now annually granted	689,433	6	1½	655,297	3	9½
Total of duties pro anno 1795	246,771	7	8½	267,341	12	8½
Ditto 1796	1,611,424	11	11½	1,452,691	11	3½
Ditto 1797	1,334,444	8	4½	1,315,421	9	6½
Add proportionate part of duties on sugar now annually granted	2,784,714	9	3½	2,642,708	4	7½
Total of duties pro anno 1798	231,348	3	6	250,632	15	3½
Ditto 1799	732,376	7	10½	730,207	19	3½
Ditto 1800	260,491	5	9	186,462	9	7½
	—	—	—	284,052	13	4
	23,791,794	15	0½	22,273,615	11	4½

In order to shew the real amount of the taxes imposed before and since the war, the produce of the duties on sugar, tobacco, and malt, now annually voted, are added to old duties, and to the new ones of which they were respectively a part, while they were perpetual.

*Exchequer, the 1st day of February, 1801.*

JAMES FISHER.

At a Meeting of the Dublin Society, at their Repository in Hawkins' Street, on Thursday, January 22, 1801 ; present thirty-two Members ;

The Right Hon. Lord FRANKFORT, V.P.  
in the Chair :

RESOLVED,

**T**HAT the report this day laid before the society from the committee appointed on Thursday last to examine the state of the hot houses in the Botanic Garden, be recommitted ; that the said committee do meet to-morrow, at three o'clock, at the Botanic Garden, to reconsider the several matters referred to them, and that they do report thereupon to the society on Thursday next.

The society having proceeded, according to order, to take into consideration the following letter from Richard Griffith, Esq. ; and likewise a letter, and statement of an experiment made under the direction of George Grierson, Esq. on the culture of potatoes, which are as follow, viz.

*Copy of a Letter from Richard Griffith, Esq.*

“ Sir,                      *Merrion Square, Jan. 15, 1801.*

“ As it appeared to be the general wish of  
“ the members present at the last meeting of

“ the Dublin Society, that I should lay before  
“ them my ideas upon uniting the two material  
“ objects, viz. the obtaining of early crops of  
“ potatoes, with the saving of seed; I take the  
“ liberty of sending you the following sketch,  
“ which, I doubt not, the experienced members  
“ of the society will be able to improve upon.

“ It appears by several British Agricultural  
“ Reports now before the society, that early  
“ potatoes are raised every year in England,  
“ so as to produce a crop in the month of May.  
“ The fittest seed for this culture is the Red  
“ Nose, or early Bangers. The next earliest  
“ potatoe is the Flat White Spanish, which is  
“ usually brought into the Dublin market in  
“ the months of July and August. Next to  
“ these are the White Eye, the Black, and the  
“ Apple Potatoe. With respect to the three  
“ last-mentioned species, they ripen nearly  
“ about the same time; but the Apple Potatoe  
“ is generally reserved for the latest sowing,  
“ and preserved for use till the crop of the en-  
“ suing year is ripe, and sometimes long after.

“ There is so little of the seed of the Red  
“ Nose or of the White Spanish Potatoe in  
“ Ireland, that in forming a plan for the pro-  
“ duction of early potatoes as a general crop,  
“ it is scarcely worth while to take them into  
“ calculation; but although the potatoes in



“ common use in Ireland, viz. the White Eye,  
 “ the Black, and the Apple Potatoes, cannot be  
 “ brought to perfection as a crop in the month  
 “ of May, yet I cannot conceive it possible that  
 “ more than one month’s difference of time in  
 “ the production of a crop can take place, sup-  
 “ posing the same process to be observed in  
 “ both cases. By pursuing, therefore, with  
 “ White Eyes, Blacks, and Apple Potatoes, the  
 “ plan hereinafter mentioned, a full crop may  
 “ be produced early in the month of July.

“ Independent of the advantage to be ob-  
 “ tained in the production of a plentiful crop  
 “ of potatoes at least two months before the  
 “ ordinary period, the saving that may be made  
 “ by the general adoption of the mode herein-  
 “ after recommended (in this season of dearth)  
 “ is a consideration of the greatest importance.  
 “ The average produce of an acre of potatoes  
 “ is seventy barrels, the usual quantity of seed  
 “ is nine barrels, that is more than one eighth  
 “ part of the gross produce.

“ If, instead of cutting the potatoes into what  
 “ is called sets, and thereby devoting to seed  
 “ that which the poor man now requires for his  
 “ daily sustenance, the use of the scoop\* were

\* “ The scoop has been tried by several members of the  
 “ society, who will, when called upon, declare how far it  
 “ has succeeded with them; but the scoop formerly used

“ universally adopted, plenty of seed might be  
“ obtained out of the daily consumption of  
“ every cottager, without any material diminu-  
“ tion of his food.

“ The method which I recommend to be  
“ pursued is as follows. As soon as the pota-  
“ toes are washed and fit to put into the pot, let  
“ a sharp knife, or a scoop somewhat in the  
“ shape of a tea spoon, be used to cut the eyes  
“ out of every potatoe, and to take with the  
“ eye as much of the surrounding skin as can  
“ be conveniently obtained, and about the third  
“ part of an inch in depth of the pulp below the  
“ eye of the potatoe, which will be found suf-  
“ ficiently deep to avoid touching the germ of  
“ the eye, and that is all that is required, as it  
“ has been found, by experience, that the shoot  
“ is fed by the skin that surrounds the eye, not  
“ by the pulp below it. The meal of the poor  
“ will be scarcely diminished by this operation,  
“ and the potatoes will be found as good for im-  
“ mediate use as if the scoop had not been ap-  
“ plied. In England the general practise is to  
“ was so deep as nearly to destroy small potatoes, and con-  
“ sequently produced little or no saving: besides, the idea  
“ of laying aside the eyes so scooped as a preparation for  
“ early sowing had not occurred, and consequently the  
“ scoop was not used until a little time before the season  
“ of planting. The mode herein recommended obviates  
“ both these objections.”

“ skin the potatoes before they put them down  
 “ to boil, and no inconvenience is found to arise  
 “ from this mode. Let the sets so scooped be  
 “ laid upon a table or a dry floor for forty-eight  
 “ hours, by which time the outside of the scooped  
 “ part will become quite dry and covered with  
 “ a thin skin and a saccharine powder; they  
 “ should then be laid in double or treble layers  
 “ on the floor of the cabin in dry litter or in  
 “ straw, moss, sawdust, chaff, hay, or sand, and  
 “ perfectly preserved from wet and frost, with  
 “ as free a circulation of air as can be given  
 “ them. Early in the month of March the  
 “ sets will begin to shoot out, and by the mid-  
 “ dle or latter end of that month there will be  
 “ shoots from each set about two or three inches  
 “ long. The sets with their shoots (carefully  
 “ preserved) are then to be laid out in the  
 “ ground prepared for the crop, and *the dung is*  
 “ *to be laid over them*; they are then to be co-  
 “ vered with mould in the usual way, and the  
 “ greatest attention is to be paid in giving them  
 “ a first, a second, and even a third covering  
 “ from the trenches, as fast as the shoots begin  
 “ to appear above ground, even so late as the  
 “ beginning of June; and in order that this  
 “ covering may be of the best quality, it will  
 “ be proper to have the trenches from two to  
 “ three feet wide, according to the depth and

“ quality of the soil, that a sufficient portion of  
“ good mould may be obtained for this pur-  
“ pose. Great care must be taken to prevent  
“ injury to the shoots in removing them from  
“ the cabin to the ground ; but although they  
“ should be bruised in the carriage, they must  
“ not be broken off (a common and erroneous  
“ practice), but planted with the eye.

“ I have the honour to be, Sir,

“ Your very obedient, humble servant,

“ RICHARD GRIFFITH.”

To the Rev. Dr. Lyster,  
Secretary to the Dub-  
lin Society.

P. S. “ Since writing the above I have re-  
“ ceived the testimonies of several respectable  
“ members of the society, declaring that they  
“ had last year tried the plants cut out of the  
“ eye of the potatoe with a scoop, and that they  
“ had answered perfectly well. Some gentle-  
“ men also mentioned (and their evidence is  
“ confirmed by the English Agricultural Re-  
“ ports), that they had tried planting the shoots  
“ alone, with success. The plan herein pro-  
“ posed, which requires that the eye should be  
“ allowed to sprout out first, and then to be  
“ carefully planted with those sprouts, renders  
“ any disappointment in the growth of the po-  
“ tatoe impossible ; for if the scooped part

“ should not shoot out, it ought not, in that  
 “ case, to be planted ; and if the eye (as it will)  
 “ make a shoot, there can be no possible dan-  
 “ ger of failure. The only danger that could  
 “ arise from planting the shoot alone, is from  
 “ it's being a soft and tender plant, and might  
 “ consequently be injured by separating it from  
 “ the eye, which may be considered as it's root ;  
 “ but when both root and shoot are planted to-  
 “ gether, they cannot fail. The saving of seed  
 “ upon middle-sized potatoes, if scooped in the  
 “ foregoing manner, will be upwards of three  
 “ fourths of the potatoe ; and upon small po-  
 “ tatoes at least one fourth.”

---

*Copy of a Letter from George Grierson, Esq.*

“ Sir,

*January 15, 1801.*

“ In making the experiment in the enclosed  
 “ statement every attention was paid in respect  
 “ of the ground and manure : the seed was  
 “ planted on adjoining ridges in that part of  
 “ the field which was most equal in quality of  
 “ soil, the manure was taken from an old dung-  
 “ hill and spread in equal proportions on each  
 “ ridge. The seed, for sake of exactness, was  
 “ planted by a board marked with the intervals

“ at which the seed was to be laid. By this experiment it appears, that the produce from the scoops of the Red-nosed Kidney Potatoe was two stone eleven pounds less than the produce from the cuts; but as there was a saving in scooping the potatoe of four stone three pounds, there was an actual gain of one stone six pounds in one hundred weight. And it is further to be remarked, that the produce from the scoops was such as any reasonable farmer ought to be perfectly satisfied with, being upwards of eight stone per perch in a ridge six feet wide. In the Apple Potatoe there was but two pounds difference between the produce from the scoops and cuts, and there was a saving of one stone ten pounds in four stone of seed by scooping; *besides the potatoes from the scoops of both kinds were larger than the potatoes from the cuts, and had much fewer small potatoes amongst them.*

“ The scoops of the Apple Potatoe produced nearly eleven stone per perch on a ridge of six feet in width, whilst the cuts produced but little more than eight stone on a ridge of the same width. They were equally dry in boiling. I think it necessary likewise, to observe, that a round shaped potatoe is better calculated for scooping than a flat potatoe, which may have contributed to the advantage

“ of the Apple Potatoe over the Red-nosed Kid-  
 “ ney Potatoes in this experiment. From this  
 “ experiment, and a similar one which I made  
 “ the year before last, I am persuaded, that  
 “ nearly half the weight of the seed may be  
 “ saved by scooping the eye from the potatoes,  
 “ and that the produce from the scoops will be  
 “ as great as from the sets usually planted. I  
 “ would recommend the scoops to be laid in  
 “ dry chaff, and am of opinion that they will  
 “ keep equally as well as cuts.

“ I am, Sir, your obedient servant,

“GEORGE GRIERSON.”

To the Secretary of the  
 Dublin Society.

*Copy of a Statement of an Experiment made by George Grierson, Esq. in planting Potatoes from Scoops and Cuts.*

Species of seed.	Ground planted.	Breadth of ridge.	Whether scooped or cut.	Weight of refuse after scooping.	Weight of seed planted.	When planted.	When dug out.	Weight of crop dug out.	Distance at which the seed was laid.	State of ground.
	<i>percb. yds.</i>	<i>feet.</i>		<i>st. lb.</i>	<i>st. lb.</i>			<i>st. lb.</i>	<i>inches.</i>	
Red-nosed Kidney Potatoo -	6 5½	6	cut.	—	8 0	27 Mar. 1800.	16 Oct. 1800.	51 6	6	lay.
Red-nosed Kidney Potatoo -	6 5	6	scooped.	4 3	3 11	28 Mar. 1800.	16 Oct. 1800.	43 10	6	lay.
Red Apple Potatoo -	4 0	6	cut.	—	4 0	29 Mar. 1800.	16 Oct. 1800.	33 13	8	lay.
Red Apple Potatoo -	3 6	6	scooped.	1 10	2 4	29 Mar. 1800.	16 Oct. 1800.	33 11	8	lay.

County of Dublin, } Walter Downy, steward and gardener to George Grierson, Esquire, came before me this day, and made oath on the holy evangelists, that he superintended the planting and digging out of the potatoes mentioned in the above account, and that the above statement is a true and fair statement. Sworn before me, at the request of

Mr. Grierson, this 21st January, 1801.

WALTER DOWNY.

HENRY MACLEAN.



## RESOLVED,

That the plan recommended by Mr. Griffith in his foregoing letter, for saving in cutting potatoe sets, by the use of a sharp iron scoop in the shape of a tea spoon, and for raising an early crop of potatoes, by laying by the sets so scooped in the manner described in the said letter, be approved by the society, and recommended to general adoption.

A member of the society having reported, from his own practical experience, the great advantage of planting grass potatoes without dung; he having taken two successive crops of potatoes and two successive crops of corn, laying down the last crop with clover and grass seed, and thereby greatly improving the ground: the planting of grass potatoes is recommended by this society.

For the purpose of giving certain information to the public concerning the culture of potatoes,

## RESOLVED,

That the Professor of Botany be directed to make a course of experiments at the Botanic Garden on that subject in various soils, using various manures, and every mode of setting and planting shoots, cuttings, and scoopings, and from the seed of the apples; and that he do report the result to the society, in order that it may be published under their sanction.

## LAND, &amp;c. FOR THE POOR.

SIR,

*March, Isle of Ely, Jan. 27, 1801.*

MY having been from home will best apologize for my not sooner answering your letter.

The late crop on this farm was full an average crop. Our markets are nearly as high as those in London. Merchants are anxiously buying up our oats, for oat bread in Yorkshire.

Where a poor man can keep a cow the year round, and have a garden *well tilled*, they are great comforts: but the plan appears to me to be seldom practicable; for a poor man could rarely get manure for a garden, and without compost the garden would not answer the labour. Rich men, when they will, may add to the comforts of the poor. You have requested my sentiments, otherwise I should not have presumed to offer them. My first observation, in order to amend the condition of the poor, and to ensure the condition of the rich, arises from considering St. Luke, ch. xiv. verses 31 and 32, 'As mankind are debased by sin, the weakest must submit.'

I have been curate of this populous parish twenty-nine years, and as a clergyman and a magistrate I have had much intercourse with the poor. Some farmers now pay their labourers only 9s. per week ; some pay 10s. 6d. which is the common rate ; and some few farmers allow 12s. per week. Even the 12s. are found insufficient to provide bread for a small and numerous family. Hence nearly all the poor are beholden to their parishes ; and, what is worse, their spirit seems broken down, and in many parishes the poor are very ragged. How to raise their broken spirit, is a question worthy the Christian and the statesman. The act of Queen Elizabeth directs magistrates to fix the price of labour. This act, I think, should be fully revived. At every quarter session let justices fix, in some mode, the rate of labour, of all possible descriptions, by the price of the bushel of wheat. Here you will cut up the evil by it's roots. The poor man would then lift up his sinking head ; and would then rise indignant were you to offer him or his children *degrading* parish relief. Men might be rated like seamen, as able-bodied and ordinary.

It is highly important to enclose all the commons in the kingdom which shall by competent men be adjudged worth enclosing. Enforce this

VOL. XXXVII. No. 209. D

by a general act, or by a heavy acre tax, for the use of Government, while unenclosed ; or by authorizing every one who has a right upon such commons to have his own right set out to him by one or two commissioners to be appointed, at reasonable pay, in every county. There was such a clause, 150 years ago, in the act for draining the Fens, and under it many thousands of acres were enclosed. The chief reason why valuable commons are not more frequently enclosed, is the unequal enjoyment of them: the rich stockmaster eats up the poor man's right for little. You took down, when with me at March, notes of the immense improvements made here and at Wimblington by the enclosure of commons ; and how I made my little fortune by such a measure, though rather imperfect, at Chattris.

To increase provisions, oblige, by an act, the occupiers of large grazing farms to have a definite quantity of their pasture land annually in tillage.

Also every occupier of any considerable farm should be obliged to have a certain number of acres of potatoes for every definite number of acres he had in his occupation. Potatoes alone would keep millions of men, and would multiply and feed millions of pigs.

Large farms are greatly prejudicial ; they de-

stroy the middle farmers, and the breed of pigs, poultry, butter, &c. &c.

Many landlords in this country have raised their rents, on account of the income tax, from one tenth to one third ; the tenant pays also one tenth, the draper, &c. &c. one tenth. The poor rates are generally trebled. The price of labour one third higher. Hence the price of provisions, while our taxes continue, cannot be well expected to be much lower. Many hundred thousands of our poor are half starved.

I am, Sir,

With much esteem,

Your humble servant,

ABRAHAM JOBSON.

---

## MEANS OF ALLOTING LAND TO THE POOR.

SIR,

*Plasgwyn, Anglesey, April 10, 1801.*

I BEGAN my last letter with some observations on the scarcity and consequent high price of grain. I stated why I could not concur in opinion with those who attributed it to combination, and I endeavoured to show that the coercive and vindictive proceedings against the growers and

circulators of grain, resulting from that opinion, were equally unjust and impolitic. I next considered what had been done, and what might further be done, to relieve those who suffered most from the scarcity. I endeavoured to point out how inadequate the relief was which they obtained in poor houses, which they derived from the voluntary contributions of the affluent, and which they were likely to derive from the compulsory aids then in contemplation. Inadequate and temporary as the relief so given was found to be, I endeavoured to show that it was not granted to the poor without many ill consequences to the community. To obviate those injurious effects, and, at the same time, to ameliorate the condition of the poor, I suggested the propriety of assigning to them allotments of land. Such allotments, I represented as likely to excite their gratitude, to promote their industry, to foster their domestic habits, and to lessen their demand on the common stock of subsistence by engaging them to become the instruments of an increased produce, and I concluded with offering my mite towards giving form and effect to a scheme pregnant with such advantages to the state as well as to the poor.

Number 206 of your ANNALS, in which my last letter is printed, having only just reached this remote place, and being, before I received it,

uncertain whether my letter would be deemed worthy of insertion, and whether the offer with which I concluded it would be acceptable, I have hitherto forbore any further communication; but as you have printed my former letter, and accompanied it with an intimation that you accept my offer, I will no longer delay the performance of my promise.

Any hints I may be able to suggest I offer with humble hopes, that, added to your own and your correspondents' more mature suggestions, they may lead to such a modification of the allotment system as will give it some claim to the notice, and ultimately to the sanction of the Legislature. Messrs. Forbes, Harris, Parkinson, and Scott, in their answers to your circular letter, speak of the consequences of allotting land to cottagers from real and long experience, and have represented them as highly encouraging. Others of your correspondents, it is true, whose opinions are entitled to every attention, but who have not enjoyed similar opportunities of observing the effects of the allotment plan, have represented it as fraught with difficulties, and one of them, I think, imputes to it an agrarian tendency. With difficulties, this, like every other system yet suggested for the relief of the poor, is certainly attended. But that it is calculated, and that the promoters of it are inclined, to re-

alize the visions of Harrington, or to revive the spirit of the agrarian laws of Rome, can by no means be admitted. Property being taxable for the maintenance of the poor, and the possessors of it being under a moral as well as legal obligation to grant them relief, no new claim upon it will be introduced by the allotment plan, nor will a transfer of any part of it be required without the concurrence of, and a full compensation given to the owner. Do allotments of land thus *given* for the relief, not extorted by the clamours, of the poor; thus purchased, not *taken* from the rich, bear any resemblance to the equal partition of lands among the Romans, or to the fanciful balance of property aimed at in Harrington's reveries? Surely they do not, and, instead of having the tendency which has been imputed to them, they appear so well calculated to render the vagrant poor stationary, the idle industrious, to increase their domestic comforts, at the same time that they lessen the burthens of the rich, and add to the public stock of subsistence, that the means by which they may be acquired and appropriated well deserve investigation. This inquiry may perhaps be facilitated by considering

*First.*—How the land to be allotted may be acquired, in whom it may be vested in trust, and out of what fund the recompence for it may be made.



*Secondly.*—How it is to be allotted by the trustees, for what term, in what quantity, and under what reservations.

*First.*—With regard to the manner in which the land to be allotted may be acquired. Appropriations of land for the benefit of the poor, not, indeed, with a view to allotments exactly similar to those in contemplation, are not without precedent. The precedent, to which I allude, being supplied by the Legislature, add authority to example, and will perhaps suggest the best, if not the only method, of acquiring the land proposed to be allotted. I shall, therefore, cite at some length the 43 Eliz. c. 2. sect. 5, the 9 Geo. I. c. 7, and the 29 Geo. II. c. 36. The first enacts, That (to the intent that necessary places of habitation may be provided for the impotent poor) the churchwardens and overseers, or the greater part of them, by leave of the lord or lords of the manor, whereof any waste or common within their parish is parcel, and upon agreement before with him or them made in writing, under the hands and seals of the said lord or lords, or otherwise, according to any order to be set down by the justices of peace of the county at their general quarter sessions, or the greater part of them, by like leave and agreement of the said lord or lords in writing, may erect, &c. in such waste or common, at the general charges

of the parish, or otherwise of the hundred or county, convenient houses of dwelling for the impotent poor.

The 9 Geo. I. c. 7, sect. 4, enables churchwardens and overseers, with the consent of the major part of the parishioners, in vestry, or other parish meeting for that purpose assembled, or of so many of them as shall be so assembled, after the usual notice, to purchase or hire any house or houses in the same parish, &c. And where any parish, &c. shall be too small to purchase such houses for the poor of their own parish only, two or more such parishes, &c. with the consent, &c. and with the approbation of any justice of the peace living in or near such parish, &c. under his hand and seal, may unite in purchasing such houses.

The 29 Geo. II. c. 36, (which is an act for enclosing, by mutual consent of the lord and tenants, part of any common, for the purpose of planting trees) directs, that, in case the inhabitants of any parish, &c. are willing to purchase such right of enclosure for the employment of the poor of the said parish, &c. and any recompence shall be agreed to be given for the same, the overseers (by the consent and direction of the major part of the inhabitants thereof, assembled at vestry or other public meeting to be held for that purpose, public notice being first given

in the church, &c. three sundays before), may pay such recompence and other charge out of the poor rates, and may apply the profits which shall arise from the sale of the timber, &c. growing thereon towards the relief of the poor of the said parish, &c. Such profits to be accounted for by them in like manner as the poor rates. By sect. 3, every agreement for any such enclosures shall be in writing, signed by the parties, and registered and enrolled by the clerk of the peace within three months.

After so full a recital it would be superfluous to enlarge on the various *provisoes* contained in these statutes, particularly as their application to the purpose now in view will readily occur to you and your correspondents. It may not, however, be improper to add, that what the recited acts say may be done by leave of the lord of the manor, may, I apprehend, also be done by the leave of any person seised in fee of the waste. By such permission, and by that of the lord of the manor, in parishes containing wastes and commons, so much of them may be acquired as the circumstances of each parish render it eligible to appropriate to the support of it's poor. It is necessary, however, to consider further what can be done in those parishes which do not contain any wastes or commons. What the law denominates a waste or common, many parishes may want.

but there are few without tracts of land, which, from want of capital or enterprize, through indolence or neglect, lie waste and unproductive. Respecting the policy of bringing them into cultivation, and the peculiar advantage of doing so by the labour of those hands which are active in mischief from want of employment, there can be no question. The only question is how such lands may be acquired for so useful a purpose. I know no other way of obtaining them than by the purchase of the fee simple, which in the unimproved condition of those lands cannot exceed in value many common rights. Thus, in general, lands may be acquired for the purpose of allotment; but the leave of the lord of the manor and of the owner being indispensable, instances may occur in which the acquisition of them is unattainable. Where, however, land can be acquired, the next consideration is to whom it should be conveyed in trust. As no beneficial interest would be vested in the trustees, and as they would be merely instruments of conveyance, much nicety of selection would not be required. The churchwardens and overseers for the time being might answer the purpose, or some householders in the parish might be nominated as trustees. No option, similar to that in the 43 Eliz. c. 2. should be given between the churchwardens and overseers, and the justices in sessions. The

former, from their locality, would best answer the purpose intended. As some check, however, upon them, and to prevent their engaging in hasty or improvident agreements, no contract entered into by them for the acquisition of land from any lord of a manor, or person seised in fee simple, should be valid, unless confirmed by the parishioners in vestry, or other public meeting assembled, after due notice, or by the justices of the county in sessions, or by commissioners to be appointed in each parish for this and any other purpose the act might require.

The recompence for land might be made in various ways. The parties conveying might receive the consideration for their interest, of whatever description, either in one sum, by instalments, or by exemption from part or the whole of their poor rates for an indefinite or limited period, as their circumstances, and those of the parish for whose benefit they conveyed, might require. The consideration whether paid in one or other of these ways could with justice be drawn from no other source than a rate on the respective parishes desirous of employing and relieving their poor by means of allotments. If a power is given of rating the county or hundred, in aid of those parishes supposed unable to raise a rate sufficient for the purchase of the land to be allotted, many bad consequences may be an-

ticipated. Some parishes really able, but wishing to participate the benefit without sharing the burthen, might represent themselves as incapable, that the *onus* might be transferred to the hundred or county. How is the truth or falsehood of interested representations to be ascertained? Who would undertake to ascertain the truth, conscious of the difficulty of doing so, and certain that injustice must be the consequence if misrepresentations escaped detection. But parishes so circumstanced as to render an union requisite, might, perhaps, without inconvenience, be permitted to join with other parishes, under similar circumstances, for their mutual benefit.

A few hints having been suggested respecting the manner in which land may be acquired, in which it may be conveyed to trustees, and in which the recompence for it may be made, I shall proceed to consider,

*Secondly*, How it is to be allotted by the trustees, for what term, in what quantity, and under what reservations.

To preclude the necessity of professional aid, and consequently to avoid much needless prolixity and expence, forms should be prescribed by the act both for the conveyance to and the transfer from the trustees. These forms ought to be as concise and comprehensive as possible, and should be expressly exempted from stamp

daties, unless a low duty might be thought to give them greater solemnity, and it might be deemed expedient to favour a belief, prevalent among the vulgar, that no contract is binding without a stamp. The conditions expressed in the form of allotment should be so general as to preclude the necessity, pregnant with dissention, of modifying them in every particular case according to imaginary claims and local circumstances.

With regard to the duration of the grantee's interest in his allotment, a limit may be assigned applicable to all cases. Instead of it's continuing seven years in one case, fourteen in another, twenty-one in a third, or any other determinate period, his interest should continue universally while he remained in the actual occupation of his allotment, and was otherwise unchargeable to his parish. This has always occurred to me as the only fair criterion by which to regulate the duration of the grantee's interest; and as it is the same which you have suggested in a note, page 265 of vol. xxxvi. ANNALS OF AGRICULTURE, I now propose it with some confidence.

It is doubtful, however, whether the grantee's interest should not, in all cases, terminate with his life. The succession of his children, if certain, will confine their views, check their exertions, and extinguish in them all spirit of en-

terprize. Besides, their succession being once admitted, that of their posterity could not consistently be excluded, and thus grants, which, to answer their design, ought to be revocable and conditional, would become perpetual and unconditional. Exceptions to this rule may, however, in some cases be proper. When such cases occur, and the children are consequently permitted to enjoy their father's allotment, their succession should arise from a renewal of the grant, and not from any hereditary claim.

If the extent of each allotment could be fixed by a criterion equally comprehensive and just with that by which the duration of interest in it may be regulated, it ought to be done ; but I doubt whether this is practicable. It seems agreed that less than one and more than another given quantity of land should not be allotted ; but to fix upon a mean suitable to all cases is so difficult that the *maximum* and *minimum* only of each allotment seems capable of positive adjustment. If the extremes only can be defined, the mean must of necessity be regulated according to local circumstances, and to those of the contracting parties.

An acknowledgment, to mark and to preserve the relative situation of the parties, should be paid to the parish for each allotment. But it would not be consistent with the design of the



allotments to reserve at their commencement, or to subject them at any period of their progress, to more than a bare acknowledgment.

Having already exceeded the usual limits of a letter, and fearing to take up that space in your ANNALS which might be occupied by more valuable communications\*, I shall only add a caution against indulging expectations which the allotment system is not calculated to answer. It can be adopted with advantage only in certain cases; any attempt, therefore, to introduce it when inapplicable, would not only end in disappointment, but discourage the introduction of it in those places where it might be beneficially adopted.

I am, &c. PAUL PANTON.

---

## OUTLINE OF A PLAN TO ASCERTAIN AND DEFINE THE DISEASES OF HORNED CATTLE AND SHEEP, &c.

WITH REMARKS ON THE NECESSITY AND UTILITY OF THE MEASURE.

BY W. P. WHYTE, ESQ. WORCESTER.

SIR,                      *Worcester, April 10, 1801.*

EVERY successive day is increasing the value and importance of those useful species of animals usually contemplated by agriculturists un-

\* Not easily to be met with.                      A. Y.

der the denominations of horned cattle and sheep, and a laudable emulation to acquire and improve the best breeds of them has prevailed in different districts of the kingdom for some years past. Amidst this patriotic and beneficial contention, in which so much judgment has been displayed with such evident advantage to the subject, is it not rather remarkable that our graziers have not made any serious and competent exertion to acquire a correct knowledge of their diseases, and a proper and scientific mode of treating them? I have no hesitation in remarking, that the vigilant exercise of a mind well informed in these things is indispensably requisite in the best system of management of these animals; and the *necessity* of the measure proposed would appear to arise from the imperfection of veterinary practice among them, from the confused notions and imperfect ideas which graziers in general have of particular diseases, from the necessity that our ideas of the things to be investigated should be well settled and defined before any improvement in the subject can be rationally expected, and from the impossibility of acquiring any real and accurate knowledge on this subject without such previous determination and arrangement of them. The imperfection of veterinary practice in general, and among these animals in particular, is too notorious to require particular

proof; and when I reflect on the advanced state of natural and rural science, the facility with which knowledge is attainable at this auspicious æra, and on the many and great opportunities which young gentlemen engaged in agricultural pursuits have of acquiring knowledge on this subject above most of those necessitous and illiterate characters whom they are in the habit of consulting on these occasions, I cannot avoid considering the deplorably low ebb at which veterinary practice is suffered to remain among the graziers as a great stigma on their character, and as indicating a culpable pusillanimity in some of our opulent and enlightened husbandmen. What consistency of character there can be in a gentleman of property, with some pretensions to literary acquirements, appealing, as to things in which his highest interest is implicated, to a man in all respects his inferior, and with whom, perhaps, out of the hovel or the fold he would be ashamed of associating, or with what prospect of advantage it can be done, I cannot discover; and both the interest of the state and that of private individuals require that this subject should be taken into more serious consideration, or I am mistaken. To what purpose have our graziers expended hundreds and thousands in improving the breeds of these cat-

VOL. XXXVII. No. 209. E

tle, if a variety of diseases be suffered to ravage them without even a serious and well-concerted attempt to control them? It ought to be observed too, that the prevalence of disease in some measure keeps pace with what are called improvements in agriculture. The effects of the biennial grass called red clover (*trifolium pratense*, *Linnæi*) on both species of these animals are illustrative of the truth of this remark; and the result of a series of observations made by that intelligent and judicious writer Mr. Marshall corroborates the same thing. Speaking of the fatness of rams, he observes, that "the decay of vigour is brought on prematurely by the unnatural state of fatness in which they are kept, and of which a variety of diseases are inevitable consequences." *Rur. Econ. Mid. Cos.* p. 420. So strongly convinced of the necessity of a measure of this kind was the intelligent writer of a recent communication on agricultural subjects, that, after taking notice of the publication of the ninth volume of "Letters and Papers," &c. by the BATH SOCIETY, he has judiciously remarked, that "there is an evil of great magnitude and importance which seems to have escaped the consideration of most persons who have written on agricultural subjects, to which we would willingly call the attention of the society. Our

" farmers have of late years paid particular re-  
 " gard to the breed of their stock, and nume-  
 " rous are the treatises which have been writ-  
 " ten on the best-proportioned limbs of swine,  
 " of oxen, and of sheep: it is to be lamented,  
 " that, after the exercise of so much judgment  
 " in the selection of stock, we employ so little  
 " in the *management of their diseases*. If a  
 " farmer has a cow or a bullock taken ill, he  
 " sends for the nearest *leech* in his neighbour-  
 " hood; a fellow who knows as much of the  
 " diseases of animals as the beast to which he  
 " is sent for: indeed, a set of beings cannot be  
 " more deadly ignorant than these consequen-  
 " tial gentlemen, who generally prescribe a  
 " *drink* to the poor creatures, whatever be  
 " their symptoms, or whatever their com-  
 " plaints. The veterinary art has been thought  
 " of sufficient importance to be cultivated in  
 " this kingdom, and we cannot help wishing  
 " that some of our numerous agricultural so-  
 " cieties would form an institution for the re-  
 " gular instruction of persons in the nosology  
 " of cattle." But how much soever these con-  
 siderations may indicate the propriety and ne-  
 cessity of the inquiry proposed, the same things  
 appear to be farther inculcated by the confused  
 notions and imperfect ideas which graziers in  
 general have of the nature and causes of dis-

eases. Beside their almost total defect of knowledge in those natural principles on which the animal system is constituted, and by which it is governed, they appear to have very confused notions of the true characters of diseases in general: a misfortune which seems to have arisen in a very principal degree from the general use of provincial terms in their discourses respecting them, and which would be in a great degree remedied by an effective execution of the plan hereby recommended. It is a fact familiar to you and many of your intelligent readers, that it is impossible for an inhabitant of Norfolk and another of Somersetshire, or a gentleman of Leicestershire and another of Shropshire, to converse intelligibly with each other on many subjects of rural economy without occasional explanations. So it is with respect to the particular subject before us. The disease which one man contemplates under the term *Yellows*, another denominates *The Blood*; a third calls that *The Goggles* which a fourth terms *The Gib*, *The Gid*, *The Turn*, or no man knows what; and perhaps a fifth knows no disease under any of these terms. Thus the most distracting confusion obtains, and must prevail until gentlemen in this department of life acquire determinate ideas on subjects of this nature, and use definite terms in their discourses upon them;

and hence would appear naturally to arise (thirdly) the necessity that our ideas of particular diseases should be well settled and defined before we can rationally expect to derive any real and solid advantages in our endeavours to detect the various sources and causes whence they arise, or to apply the means naturally adapted to prevent or remedy them. Until we have distinct ideas of the characteristic phenomena of a disease, it is impossible that we can, with any regard to truth or science, charge this or the other effect to any particular cause. The necessity of obtaining correct and settled ideas of particular diseases, if we would make any valuable progress in our efforts to detect their causes, is therefore too obvious to be longer insisted upon, as they are indispensably requisite in order to our acquiring any real and correct knowledge in this interesting and delightful study. Unless we *know* the effect, it is impossible we should discriminate on the abstruse subject of physical causes. This subject therefore imposes upon us the absolute necessity of fixing our closest attention to the pathology of diseases, if we would be of any use in assisting the sufferers under them; and furnishes a field in which the profound physiologist may gather instruction, and the most generous patriot exhaust his philanthropy. Indeed, the necessity

of the measure proposed seems to be so obvious and striking, that it shall only be farther remarked, with a view to show the real and great occasion there exists for an exertion of this nature, that the conversation at almost every market table in the grazing districts affords proofs of the incompetency of ordinary veterinary practice to subdue most of the diseases to which animals are subjected, and of the general sense of the country of the advantages which would result to it from an improved one, under which the accession and fatal progress of diseases would be combated on true principles of natural and physiological science: a subject on which several of my correspondents have taken occasion to introduce hints in their recent communications to me.

Pondering these things, and considering the great importance of preserving from disease animals subservient to the subsistence of the British community, lamenting the extent and prevalence of various complaints among horned cattle and sheep which contribute to that end in a very eminent degree, and being duly sensible of the general and flattering encouragement held out to prosecute a design of this nature in numerous answers to my circular letter "On the Blood in Sheep," I have conceived the utility of a competent and adequate inquiry



into the nature and causes of the various diseases of these valuable species of animals, and the consequent propriety and importance of an attempt to ascertain their antidote and remedy. By various communications with which I am favoured from gentlemen resident in all the principal grazing districts in the kingdom, it appears not only that the particular complaint which constituted the chief object of inquiry in that letter prevails in all the fertile provinces, but that others of a similar nature ravage the stock of many of the most considerable grazing farms. Hence it would appear, that an investigation similar to the one proposed, conducted with ability and prosecuted with energy, would be productive of the most essential service to the state, and to the breeding and grazing interests in particular. Indeed, so highly fraught with both public and private interest does this inquiry appear to be at the present day, that I apprehend the nation, and graziers in particular, would feel themselves deeply interested in the success of the undertaking, and consequently disposed to encourage it by a pecuniary remuneration adequate to the extent and importance of it. If I could be persuaded that this would actually be the case, I believe I should feel little hesitation in tendering my services for this purpose, as soon as more private

engagements would admit, and the necessary apparatus and arrangements could be prepared: and the *fiat* of DR. GARNETT, the learned Professor of the Royal Institution, as to my ability for it, would, I presume, give public satisfaction. If I might be permitted to anticipate the event of a public sanction in a matter so generally interesting, I should submit for public consideration a PROSPECTUS of it, in most important particulars similar to the following.

*OUTLINE of a PLAN to ascertain and define the different Diseases of Horned Cattle and Sheep, the various Causes whence they arise, and the Means of preventing and remedying them.*

1. That a TOUR shall be made at different times through all the principal grazing districts in that part of Great Britain called England, similar to those of Arthur Young, Esq. or Mr. Marshall, the writer of the valuable volumes on the Rural Economy of the different Counties, for the purpose of ascertaining and defining the different diseases incident to horned cattle and sheep, the various causes whence they arise, and the means of preventing and remedying them.

2. That every particular disease (so far at least as such tour shall afford opportunity) shall

undergo a scientific and full investigation, with a view to the different ends proposed.

3. That MINUTES of every material occurrence and transaction relative to the objects in view shall be regularly taken and preserved; with a view to future publication; in particular, that these shall record the nature of particular diseases, the districts where they are most prevalent, the real, apparent, or probable causes of them, the provincial opinions on the subject, the symptoms of such diseases, the means which have been hitherto employed with intent to remedy them, the success or otherwise of such means, the morbid anatomical appearances after death, the certain or probable means of prevention, &c.

4. That the result of the whole shall be published in octavo volumes, either in distinct parts once in every six or twelve months, or, arranged in systematical form, at the conclusion of the tour, as may be thought advisable by the Secretary to the Board and the Author, upon such terms as shall furnish them to the Subscribers at a moderate expence.

5. That the Board shall afford their sanction to the undertaking by a letter of recommendation from the President; which the Tourist shall be at liberty to carry with him, and show occasionally.

6. That the expence of the undertaking and the remuneration to the Tourist shall be borne and defrayed by a public subscription and the money to arise from publication of the minutes.

7. That subscriptions shall be received (probably) by Arthur Young, Esq. F.R.S. Secretary to the Board.

8. That the ROYAL FAMILY and Nobility of this kingdom, Foreign Potentates and Nobility, and Public Bodies and Societies established by royal charter, be invited to subscribe at pleasure.

9. That the Gentry, Land Owners, Breeders, Graziers, and all others shall become Subscribers upon the payment of \_\_\_\_\_ to the Receiver.

10. That a sufficient number of copies of the minutes shall be handsomely printed on a superfine royal quarto paper, and hot pressed, and delivered *gratis* to all Subscribers of any sum being five guineas more than the ordinary subscription.

11. That so soon as \_\_\_\_\_ pounds are subscribed, the Tourist will proceed in the undertaking.

When we reflect in what a rapid manner the population of the united kingdom is advancing,

how much the subsistence of the community depends upon the aggregate produce of provisions arising from the slaughter of these animals, how far the diseases incident to them extend their fatal and almost uninterrupted influence, and how many thousands are annually lost to the community in consequence of it, the *utility* of an undertaking similar to that above proposed must appear very manifest. When it is recollected, that the best breeds of both these species of cattle in this kingdom sprang from the loins of a few individuals of each twenty or thirty years ago\*; when we endeavour to estimate the almost incalculable value of some individuals in the stock of some of the first grazing farms, and are informed that instances of such extraordinary merit are occurring almost every year, the value of any particular animal may be in some degree appreciated, and the importance of the subject in some measure conceived. When too we consider how much the present laudable emulation among breeders is discouraged, and the progress of their efforts to obtain an improved sort of stock retarded, while animals remain thus unprotected against, and almost unassisted under the attacks of disease; and when again it is re-

\* The stock of the late Mr. Bakewell and Mr. Fowler afforded memorable instances of the truth of this remark.

collected or understood, that the most sudden and fatal diseases usually occur in the best flocks, or to the most valuable individuals among live stock in general (and that this is the case I am warranted by very recent and respectable authority in declaring), the most superficially-informed in subjects of this nature must be compelled to admit, that the utility and importance of such an investigation as is proposed stand in no need of farther elucidation.

It would seem to be morally impossible to effectuate the principal objects of this project without the personal examination of the subjects of disease, their various habits, conditions, means of sustenance, climate or temperature in which they have been kept, &c. and it would appear to be physically so to ascertain these without a minute scrutiny into each particular. It is not the general and imperfect accounts of these things which might be obtained by means of a correspondence on the subject that would be sufficient to found any general doctrine upon, for these would be found to be nearly as many contradictions, as they were in number; but this can only be done after a critical and extensive investigation of the subject, assisted by close, long, and skilful observations upon it. No mode of procedure, therefore,

which I can devise seems so well adapted to accomplish the objects of the undertaking as that of a TOUR to be made through the principal grazing districts in the kingdom ; by which opportunities would be afforded of personal inspection into the principal objects of the inquiry, and by which the various diseases would come under notice in all their different stages and modifications, in animals in every condition and under the most varied circumstances, on soils of every possible composition and under every different mode of cultivation. By this mean too, and perhaps by no other, would facility be afforded to inspect, by chemical analysis, the different vegetables in their recent state on which animals under or subjected to disease had been subsisted, the soils on which they had been produced, both in their natural and improved states, the manures with which they had been improved, &c. and these are minutiae essentially requisite to be attended to in forming an accurate judgment on the real or probable causes of diseases in graminivorous animals. Thus too would opportunities be frequently obtained of making or directing experiments, with a view to the cure of some diseases hitherto deemed incurable ; of devising and arranging others with design to prevent their recurrence, or to obviate others of sub-

ordinate consideration ; and above all of examining anatomically the carcases of cattle after death, in a greater variety of cases and instances than could be procured in any public institution, or perhaps by any other means. These are some of the principal reasons which have induced me to propose a Tour as the mean best adapted to conduce to the ends proposed.

As it would be a principal object in the projected undertaking to perpetuate the result of the inquiries therein meditated, there can accrue no ground to hesitate on the propriety of publishing every material transaction and occurrence in the prosecution of them ; and the advantages resulting to Europe, and to this kingdom in particular, from the notes on agricultural and rural economy, taken by different gentlemen while making perambulations through different districts of country, and preserved and published for general use, leave little room to doubt that some benefit might also be derived from the Tourist taking notice also of such practical experiments and improvements in these departments as have been made and carried into effect since the writings of the later Journalists.

If you consider the PLAN (of which the above is an imperfect sketch or outline) in any degree calculated to promote the public interest,



and that it may not be improper to apprize the public of it while it undergoes those modifications and improvements which may be found necessary or advisable previously to it's being finally adopted and acted upon, you will contribute your assistance to it's promulgation by giving it a place in the next number of the 'ANNALS,' and oblige, Sir,

Your obedient servant,

*Arthur Young, Esq.*

W. P. WHYTE.

## PREMIUMS OFFERED BY THE BOARD OF AGRICULTURE, FOR 1801.

### No I.—*Condition of the Poor.*

**T**O the person who shall draw up and produce to the Board, the best, simplest, and most practicable plan for ameliorating the condition of the labouring poor of this kingdom, by alterations in the poor laws, of easy execution, and without materially increasing poor rates—the *gold medal*.

To be produced to the Board on or before the first Tuesday in March, 1802.

No. II.—*Cottages.*

To the person who shall build on his estate the most cottages for labouring families, and assign to each a proper portion of land for the support of not less than a cow, a hog, and a sufficient garden——*the gold medal.*

Accounts of the expences of building—land assigned—culture, if any—live stock, and state of the families, with the rent paid—verified by certificates, to be produced to the Board on or before the third Tuesday in April, 1802.

The same premium for 1803.

No. III.—*Cows for Cottagers.*

Doubts having been expressed by some persons concerning the expediency of cottagers keeping cows, except on rich soils; the Board will give to the person who shall produce the most satisfactory account, verified by experiments, of the best means of supporting cows on poor land, in a method applicable to cottagers——*the gold medal.*

Accounts to be produced of the soil—articles cultivated—produce—stock kept—and every material circumstance—verified by certificates, on or before the first Tuesday in May, 1801.

The same premium for 1802.

No. IV.—*Culture of Plants.*

To the persons who shall make the most satisfactory experiments tending to the improvement of the culture of each of the following plants respectively, viz. wheat, rye, barley, oats, pease, beans, tares, buck wheat, turnips, cabbages, rutabaga, potatoes, carrots, parsnips, clover, lucerne, sanfoine, chicory, hemp, flax, hops  
—*the silver medal.*

Accounts, verified by certificates, to be produced on or before the second Tuesday in May, 1802.

The same premium for 1803.

The same premium for 1804.

No. V.—*Cottage.*

To the person who shall build and describe to the Board the cheapest cottage, being at the same time durable and comfortable—*the gold medal.*

A plan, elevation, and account of the materials and expence, verified by certificates, to be produced on or before the first Tuesday in May, 1801.

The same premium for 1802.

No. VI.—*Shoes for the Poor.*

To the person who shall invent and execute in a manner applicable to common use, the best

VOL. XXXVII. No. 209. F

and cheapest substitute for leather, in the shoes of the labouring poor, being an improvement on any that may at present be in use—the *gold medal*.

A pair of shoes, with an account of the materials and expence, to be produced on or before the first Tuesday in December, 1801.

#### No. VII.—*Soiling Cattle.*

To the person who shall, through the entire summer of 1801, keep the greatest number of cattle in stalls, houses, or confined yards, and fed entirely in the soiling method with green food—the *gold medal*.

Certificates of the number of cattle, and acres of food and sorts eaten, the quantity of dung made, with other circumstances of the experiment, to be produced on or before the first Tuesday in December, 1801.

The same premium for 1802.

#### No. VIII.—*Waste Land.*

To the person who shall improve, and bring to the annual value of not less than 10s. an acre, the greatest number of acres heretofore waste, not less than fifty—the *gold medal*.

Accounts of the improvement, verified by

certificates, including the state of the land before the experiment, and of the cultivation, expences, and produce, to be laid before the Board on or before the first Tuesday in March, 1803.

Notice of the intended improvement to be sent to the Board.

The same premium for 1804.

No. IX.—*Draining.*

To the person who shall lay before the Board the most satisfactory account of one of Mr. Elkington's drainages—*the silver medal.*

The soil and state of the land before draining, the method and expence of the improvement, with a plan and the result of the operation, to be produced on or before the second Tuesday in December, 1801.

No. X.—*Folding Sheep.*

To the person who shall, by a series of the most satisfactory experiments, ascertain the comparative advantages and disadvantages, and best method of folding sheep—*the gold medal.*

Accounts, verified by certificates, to be produced on or before the first Tuesday in April, 1803.

The same premium for 1804.

No. XI.—*Irrigation.*

To the person who shall, in a country where irrigation is not generally in practice, water the greatest number of acres, and in the completest manner——*the gold medal.*

To the person who shall, under similar circumstances, water the next greatest number of acres, and in the completest manner——*the silver medal.*

Accounts of the old and new state of the land and value, the method, expence, and produce, verified by certificates, to be laid before the Board on or before the third Tuesday in January, 1802.

The same premiums for 1803.

No. XII.—*Horses and Oxen.*

To the person who shall make and report to the Board the most satisfactory experiments on the comparison of horses and oxen, in the general business of a farm——*the gold medal.*

The account, verified by certificates, to be produced on or before the last Tuesday in April, 1803.

The same premium for 1804.

No. XIII.—*Green Crops for Manure.*

To the person who shall give the most satisfactory account, verified by experiments, of the

effect of ploughing in green crops for manure  
—*the gold medal.*

Accounts, with certificates, to be produced  
on or before the first Tuesday in March,  
1802.

The same premium for 1803.

No. XIV.—*Potatoes and Wheat.*

Potatoes and wheat, in constant succession,  
being the course of crops which affords the most  
abundant food for man, the Board will give to  
the person who shall make and report the most  
satisfactory experiments, on not less than five  
acres cultivated in that course during four years  
—*the gold medal.*

Accounts of the soil, culture, produce, ap-  
plication or price, verified by certificates,  
to be produced on or before the first  
Tuesday in May, 1804.

The same premium will be given (but not  
to the same person) for the same account of six  
years.

Accounts to be produced in May, 1806.

The same premium continued.—Accounts to  
be produced in 1807.

No. XV.—*Manures.*

To the person who shall lay before the Board  
the most satisfactory account, verified by che-

mical experiments, or other sufficient authorities, of the nature of manures, and the principles of vegetation——*the gold medal.*

To be produced on or before the first Tuesday in December, 1801.

No. XVI.—*Manures.*

To the person who shall lay before the Board the most satisfactory account of the application and effect of manures, verified by practical experiments on not less than one acre for each sort of manure——*the gold medal.*

To be produced on or before the first Tuesday in December, 1802.

The same premium for 1803.

No. XVII.—*The Weather.*

To the person who shall lay before the Board the most satisfactory paper on the means of ascertaining the probable state of the weather, so as to furnish useful information to the husbandman——*the silver medal.*

To be produced on or before the third Tuesday in May, 1801.

The same premium for 1802.

No. XVIII.—*Instruments.*

To the person who shall give the best account, with drawings, of the various instruments of husbandry——*the gold medal.*



## AGRICULTURE.

717

To be produced on or before the first Tuesday in April, 1801.

The same premium for 1802.

### No. XIX. *Land for Cottagers.*

The Board having received information that the labouring poor on the estates of several persons in Rutland and Lincolnshires, having land for one or two cows, and a sufficiency of potatoes, have not applied, in the present scarcity, for any parochial relief; and it appearing to be a great national object to spread so beneficial a system, the Board will give to the person who shall explain, in the most satisfactory manner, the best means of rendering this practice as general through the kingdom as circumstances will admit—the gold medal.

To be sent to the Board on or before the first Tuesday in November, 1801.

### No. XX.—*Cottage.*

To the person who shall produce to the Board the model of the best and cheapest cottage, on a scale of one inch to a foot; with estimates of the expence of erecting it—the silver medal.

To be produced to the Board on or before the first Tuesday in December, 1801.

No. XXI.—*Oven.*

To the person who shall produce to the Board the best cottage oven, to bake, at one heating, bread sufficient for a family of six for a week——*the silver medal.*

Cheapness of the oven and fuel essential points of merit.

To be produced to the Board on or before the first Tuesday in December 1801.

No. XXII.—*Cottage Bed.*

To the person who shall produce to the Board the best and cheapest bed and bedding for a cottage, being an improvement on any already known——*the silver medal.*

To be produced to the Board on or before the first Tuesday in December, 1801.

No. XXIII.—*Experiments.*

To the person who shall produce to the Board an account of the most important experiment or experiments in agriculture, made during the year 1801 or 1802——*the gold medal.*

Accounts to be produced, verified by certificates, on or before the first Tuesday in March, 1803.

No. XXIV.—*Plough.*

To the person who shall produce to the Board

the plough which shall, with the least force, turn a furrow not less than six inches deep and nine broad, in the best and neatest manner—the *gold medal*.

To be produced on or before the first Tuesday in February, 1802.

The plough which gains the premium to remain the property of the Board, the price of it being paid.

No. XXV.—*Carts.*

To the person who shall produce to the Board the cart or other carriage, applicable to common use, in which one horse shall draw the greatest weight—the *gold medal*.

To be produced on or before the first Tuesday in February, 1802.

The cart which gains the premium to remain the property of the Board, the price being paid.

No. XXVI.—*Laying down to Grass.*

To the person who shall in the most satisfactory manner make the following experiment in laying down land to grass, on a scale of not less than three acres to each division, and report the result to the Board—the *gold medal*.

The land to be divided into three parts, one sown with grass seeds among barley or

oats, in the spring, on land that was fallowed or yielded turnips the preceding year: one sown with grass seeds alone in July or August, having been fallowed from the Michaelmas preceding: and the third sown with grass seeds and wheat early in September, having been fallowed or cropped with tares or turnips: the soil to be of the same quality; the grass seeds the same in each division. The grass to be fed with sheep the first year. Accounts stating the comparative expences and success of the three methods, verified by certificates to be produced to the Board on or before the first Tuesday in December, 1803.

No. XXVII.—*Seed Wheat.*

To the person who shall, by the most satisfactory comparative experiments, ascertain the proper quantity of seed wheat to be used per acre, in the common or broadcast husbandry; not less than one acre to be applied to each quantity of seed—*the gold medal.*

Accounts containing a particular description of the soil and the preparation thereof, including the manuring, if any, also the time of sowing; the various quantities of seed employed; with the respec-

tive products, verified by certificates to be produced to the Board on or before the first Tuesday in December, 1802.

No. XXVIII.—*Seed Wheat.*

The same premium as in the preceding number, and on the same conditions, to be given for ascertaining the proper quantity of seed wheat dibbled on a clover or other lay.

No. XXIX.—*Seed Barley.*

To the person who shall, by the most satisfactory comparative experiments, ascertain the proper quantity of seed barley to be used per acre, in the common or broadcast husbandry; not less than one acre to be applied to each quantity of seed—the *gold medal*.

Accounts containing a particular description of the soil, and the preparation thereof, including the manuring, if any; also the time of sowing; the various quantities of seed employed; with the respective products, verified by certificates to be produced to the Board on or before the first Tuesday in December, 1801.

No. XXX.—*Seed Oats.*

The same premium, and on the same condi-

tions, to be given for ascertaining the proper quantity of seed oats.

No. XXXI.—*Seed Oats.*

The same premium, and on the same conditions, as in the preceding number, to be given for ascertaining the proper quantity of seed oats dibbled on a lay, or on old pasture ground.

---

GENERAL CONDITIONS.

1. The Board reserves to itself the power of withholding any premium when the communication or communications are not deemed sufficiently important to merit the reward.

2. The MS. &c. sent in claim of premiums, to remain the property of the Board.

3. All memoirs, &c. sent in claim of premiums, to be without names, but with a mark or number; and accompanied by a sealed letter, (on which is to be written the same mark or number) containing the name and address of the claimant; which sealed letter will not be opened unless the the premium is adjudged to to that mark or number.

CULTURE OF POTATOES.

COMMUNICATED BY SIR WILLIAM PULTENY,  
BART. M. P.

*April 16, 1801.*

**I**t is not generally known of what importance the culture of potatoes may prove for preventing the consequences of scarcity from bad seasons; but it is well known that two successive bad seasons will always produce very serious effects, even in the countries most productive of grain. It is true, that in such countries as are in the constant practice of exporting largely the inconveniences are less felt, even from two successive scanty harvests: but as the countries usually supplied by their surplus must still require the usual quantity, the price will necessarily rise, and they cannot secure themselves from scarcity except by putting a stop to exportation, a measure, though necessary, yet attended with great loss.

Potatoes do commonly produce a good crop, even when the produce of grain is deficient; though it is true, that in two instances, one in 1794 and one in 1800, the crop of potatoes suffered as well as that of grain.

Mr. Cotes, of Woodhouse, M. P. printed

lately two letters, addressed by him to the President of the Board of Agriculture, in which he stated a practice of his, of raising potatoes on fallows intended for wheat, by which a crop of that valuable food was obtained from land which would have been otherwise unproductive during the fallow, and that he found his succeeding crop of wheat was not injured but increased by that method. This may be accounted for by the ascertained fact that wheat does not succeed so well, if sown on land immediately after dunging, as it does when a previous crop is taken after the dung. For this reason it is that the best farmers in East Lothian used to dung their fallows for barley in the spring and sow wheat after their barley. This practice of planting potatoes on wheat fallows does not interfere with the practice of turnip husbandry, for though it be true that the land fittest for turnip is also fit for potatoes, yet many farmers do not sow turnips at all; and much land which is not so well fitted for turnip is very fit for potatoes; and both in the case of not sowing turnip, and in the case of land unfit for turnip, the fallows for wheat do not usually produce any crop in the summer.

To show of how much consequence to the food of the people the planting potatoes on such fallows has proved by experience, it may be of use to publish extracts from a letter received



from a respectable gentlemen, Sir JOHN MERTHLEN POORE, Bart. of Wiltshire, on this subject. He has consented to it's publication, in hopes that it may be of benefit to the community, by providing, this season, a quantity of food, which may come into use before the new harvest can come plentifully into the markets, viz. in the months of August, September, and October next, and may secure against the risk of another scanty harvest, notwithstanding the present flattering prospect. It is not too late to plant potatoes. They may be planted with success till the end of May, though the sooner they are planted the better. It has been proved by experiments, that the eyes of potatoes scooped out will answer well for seed, so as to preserve the remainder for food.

“ Sir,

*Rusball, 4th April, 1801.*

“ I can prove, not by theory; but practice,  
 “ the benefit of planting potatoes on fallows.  
 “ In the parish where I reside, the whole of  
 “ which, except five acres, is my property,  
 “ there are thirty cottages, containing 131 poor  
 “ people: I have for five or six years past al-  
 “ lotted, free from rent, four acres of land, in-  
 “ tended to be sown with wheat the following  
 “ autumn, for the cottagers to plant with po-  
 “ tatoes; by which means each raises from ten

“ to fifteen sacks, equal to 240 pounds per sack,  
“ yearly, in proportion to the number of their  
“ children ; each has not only sufficient for his  
“ family, but he is enabled also to fat a pig.  
“ They declare, was I to give among them a  
“ hundred pounds, it would not be of so much  
“ benefit to them ; and it is not one shilling out  
“ of my pocket, for I have as good, if not a bet-  
“ ter, crop of wheat from this land, as I have  
“ from the other part of the field.

“ The method I take is this : the latter end  
“ of November I plough the land, the frost dur-  
“ ing the winter mellows it ; the beginning of  
“ March following I plough it again and harrow  
“ it, at both which times I have little to do with  
“ my horses. I then divide it into lots ; a man  
“ with a large family has a larger lot than a  
“ single person, or one who has only two or  
“ three children, allowing about 5 perches (of  
“  $16\frac{1}{2}$  feet square) to each in a family. They  
“ then plant it, and put over their potatoes what  
“ manure they have collected the year preceding,  
“ for every cottager has more manure than ne-  
“ cessary for this from his fire and a variety of  
“ other things : and during the summer, after  
“ their day's labour is done, they and their wives  
“ hoe them ; and as every man works more cheer-  
“ fully for himself than for another, they do not  
“ suffer a weed to grow. In October they dig

“ them up; and it is the most pleasant thing  
 “ imaginable to see the men, their wives and  
 “ children, gathering the produce of their little  
 “ farms, which is to serve them the ensuing  
 “ winter. Was this plan generally adopted,  
 “ the labourers would consume but little corn;  
 “ which would supply the manufacturing towns,  
 “ and we should have no occasion to import.  
 “ As four acres are sufficient for thirty families,  
 “ it would take but a small quantity of land  
 “ from every farm in the kingdom. The way  
 “ practised here is to plant the potatoes in fur-  
 “ rows, eighteen inches apart, and a foot apart  
 “ in the rows. The land about me is of diffe-  
 “ rent qualities; on the hills, rather light; in  
 “ the vale, near the parish, inclining to clay:  
 “ but all fit for turnips. The potatoes are  
 “ planted in the low land, being nearer home.  
 “ The poor, at present, will not live entirely  
 “ without bread, as many do in Ireland, though  
 “ potatoes daily get into use more and more;  
 “ and I am persuaded, was my plan generally  
 “ adopted, in two or three years the labourers  
 “ in the country would consume but little or  
 “ no corn. Thirty years ago the poor in this  
 “ part of the country would not eat potatoes,  
 “ if they could get other roots or vegetables.”

It may be useful to many persons who cannot  
 VOL. XXXVII. No. 209. G

prepare their land immediately for potatoes, to mention the manner in which sets are preserved for planting in Lancashire.

Upon the same ground from which a crop has already been taken, the early seed potatoes are in some places afterwards planted, and probably the later sorts may answer in the same way; after being got up about November, they are immediately cut up into sets, as usual, for planting, and are preserved in oat shells, or sawdust, where they remain till they are planted, after having one spit taken off, and are planted with another, of a length sufficient to appear above ground in the space of a week.

But the most-approved method is to cut the sets, and put them on a room floor where a strong current of air can be introduced at pleasure, the set laid thinner than in the other way, viz. about two lays in depth, and covered with the like materials (shells or sawdust) about two inches thick. This screens them from the winter frosts, and keeps them moderately warm, causing them to vegetate; but at the same time admits air to strengthen them and harden their shoots, which the cultivators improve by opening the doors and windows on every opportunity afforded by mild, soft weather. They frequently examine them; and when the shoots are sprung an inch and a half, or two inches, they care-

fully remove one half of their covering with a wooden rake, or with the hands, taking care not to disturb or break the shoots. The earliest potatoe is the Superfine White Kidney : from this sort, upon the same ground, have been raised four crops, having sets from the repository ready to put in as soon as the others were taken up.

The sets or the eyes scooped out intended for planting this season may be prepared in the above manner, which will allow of planting them much later than usual.

DEAR SIR WILLIAM,

*Artscot, April 17, 1801.*

I AM greatly obliged for the trouble you have taken in communicating to me so fully your sentiments respecting what I believe to be the most effectual means to prevent a return of scarcity of food.

I have usually raised one or two acres of potatoes in my turnip fallow, in the same mode as practised by Mr. Pritchard. I have been prevailed upon, contrary to my own judgment, to plant them in rows, with narrow intervals, hand hoed. By this means I suppose the quantity of produce has been increased : but I am convinced that wide intervals, of three, four, or

five feet, is preferable for the land, and more adapted to strong soils; and such only should be summer fallowed, it would be frequently impossible for the plough to clean the intervals with a narrow space between the rows.

Mr. Cotes's letters were inserted in the last *Salopian Journal* by Mr. Probart.

Let us but determine to raise this most essential article of food in sufficient quantities, and we shall soon learn which is the best system to be adopted. What is a right practice at Wroxteter, is not suitable for Corve Dale.

A labourer with three or four children will use from 25 to 35 bushels: suppose the average produce 180 bushels per acre (of 90 lb. per bushel), which is a fair crop, a sixth part of an acre will about suffice. He will not have it in his power to find proper and sufficient manure if he do not keep a cow.

I have observed, and it is generally thought, that potatoes are an exhausting crop: it will be less so upon Mr. Cotes's plan, but every consideration should give way to prevent a return of the wretched state in which the poor now labour for food. An increased quantity will be set this year, if seed can be had.

We should guard against a return of these times; and I humbly propose the following mode, as what appears to me the most effec-

tual: I have a covenant with my few tenants (and it is almost the only one respecting the culture of the land), that, in proportion to the quantity occupied, so much shall every year be in summer or turnip fallow; in future they shall covenant, under a penalty, to have at least one fourth of the fallow with potatoes, well cultivated, manured, and cleaned. I do my tenants no injury by this covenant. Will you, Sir, be pleased to consider whether the example set by yourself and other proprietors of large estates would not be laudable and likely to be followed. I shall mention this to Mr. Probart and others.

I know the farmers to be most useful members of society; but, like others engaged in a business on which their subsistence depends, they will look to what is most profitable to themselves: and they know how to speculate on the markets, and would soon be sensible that an increased quantity of potatoes would diminish the consumption of wheat: that price depends upon quantity and demand; and, if they be permitted to pursue their own course, they will desist from raising the usual quantity when they be reduced to 1s. 6d. per bushel, or under, and the consequence is obvious. If there be more raised than may be sufficient for man, the surplus may be consumed by stock, and with equal profit, with turnips. Upon wheat lands they

will be nearly clear gain. The farmer can afford to sell to his labourer at one shilling per bushel, or permit him to set (the farmer ploughing and finding dung) what will be sufficient for his family at one shilling per rood, eight yards square. The gain to the farmer will be considerable from the reduction of the poor rates.

I live much among the labouring country poor; they are mostly orderly, sober, industrious, and grateful. I know their use. I know the sufferings they have quietly endured since 1798. Humanity and good policy require that their distresses should be removed, and that a frugal and industrious man should earn by his daily labour his daily bread, without the degradation of seeking parochial relief.

By the same post, with your letter I received, from Lord Carrington, a copy of the outline of a general enclosure bill now before the House of Lords, requesting my sentiments upon it.

I am, most respectfully,

Your faithful servant,

E. HARRIES.

*Sir Wm. Pulteney, Bart. M.P.  
Bath House, London.*

P. S. If it meet your approbation, be pleased to enclose this to A. Young, to be inserted in his *Annals of Agriculture*.



REMARKABLE CULTURE OF POTATOES.

SIR, *Seausbrick, Lancashire, Mar. 14, 1801.*

As Government have held out such liberal encouragement\* for the growth of potatoes, it may not be deemed uninteresting to you to state the enormous expence our small farmers and cottagers are at this season in their spirited endeavours to raise an early supply of that root for the market.

The following are the particulars of a large acre, eight yards to the perch, as cultivated by my next neighbour, and may be looked upon as nearly the standard of the neighbourhood.

	£.	s.	d.
To paring the greensward - - -	1	6	0
Digging, at 1s. 7d. per perch - -	12	13	4
140 tons of dung, at 10s. - - -	70	0	0
Carting ditto from the canal side,			
which is near 6d. per ton - - -	3	10	0
50 bushels of sets, at 15s. - - -	37	10	0
Rent - - - - -	4	0	0
To setting, weeding, getting up, preparing, and carrying to market from Mordly to Manchester, distant 33 miles - - - - -	36	8	4
	<hr/>		
	165	7	8
	<hr/>		

\* The speculation of encouragement. A. Y.

Enormous as the amount appears, yet, if the season prove favourable, viz. no very sharp frosts towards 'the latter end of April or in May, the farmer expects, and I believe will be very handsomely repaid for his labour and spirited exertions.

The manure they use is a mixture of horse, cow, and privy, with coal ashes and hog dung. If the farmer had his manure to provide at the present price, the expence, owing to the rise, would amount to more than above stated by 10 or 15l.; for, owing to the great demand, the price has risen in Liverpool, and proportionably in other towns, for the best horse dung, which a few years ago sold for five or six shillings, to 15s. the ton, and upwards. I have been informed that 17s. 6d. per ton has been offered on the spot for a particular dunghill.

The same enterprizing spirit appeared among the farmers for the present growing crop of wheat as now does for potatoes and in their preparations for spring corn, insomuch, notwithstanding the highly-advanced price of manure, that at least four times the quantity has been bought, and brought into this township, that was ever known before in any one season.

The *best* dung from Liverpool, brought hither by the Leeds and Liverpool canal, stands the farmer, when discharged out of the boat, in

nearly one pound per ton ; yet the farmers *continue to purchase considerable quantities!*

From the above exertions it clearly appears, that if our own farmers (and not foreigners by importation) were always allowed the advantages from the high price of corn in dear years, their exertions would be so efficient as always to prevent such a scarcity as we at present experience ; for if no foreign corn were to be sold in our markets until our wheat bore the price of 12s. the bushel, and other grain in proportion, the present efforts would continue, and the farmer not be dispirited, as of late years, by the uncertainty of price, owing alone to our present corn laws.

I am happy to add, that the best-informed in the neighbourhood seem convinced that potatoes will be cheap the next season ; some have already agreed for them at 2s. the bushel (90 lb.) at the time they get them up.

I ever remain, Sir,

Your obedient, humble servant,

THOMAS ECCLESTON.

## SOMERSET.

TAUNTON LENT ASSIZES, 1801.

The Grand Jury and Magistrates of this County now assembled, having seriously considered the alarming State of the County and unanimously resolved to take the legal Advice of the Gentlemen whose Name are hereunder subscribed, in answer to the following Queries, think themselves called upon to declare in this public Manner, that it is their firm Determination to adopt such Conduct as the Law appears to prescribe to them.

JAMES BERNARD,

Foreman of the Grand Jury, and a Magistrate.

*Queries and Answers.*

*First.*—"A MOB being assembled with an avowed intention, by force, to compel an illegal act to be done, can the magistrates direct the military to act before reading the riot act?"—"We are of opinion that if a mob be assembled with an avowed intention, by force, to commit any illegal act, suppose to oblige farmers to subscribe an undertaking that they will sell their corn at a reduced price, the magistrates may and ought to exert themselves to prevent the execution of such unlawful act; and if their

power, assisted by the ordinary peace officers, be insufficient, to call in to their aid the military power, and prevent the completion of such illegal act ; and this may be done without any reference to the riot act."

*Second.*—" If the act must be read, in that case must the magistrate wait any, and what time, before he can subdue them by force?"—" Wherever the act must be read and the magistrates are acting only under it, they must wait an hour after they have read the proclamation enjoined by it, or been forcibly prevented from reading it, before they can apprehend the offenders so as to bring them within the penalties of the act."

*Third.*—" After the riot act has been once read, may the magistrates act on a subsequent day in the same place without again reading the riot act?"—" At any subsequent day after reading the act, it must be again read in the same manner, if the mob has once dispersed and met again."

*Fourth.*—" May the magistrate, if the mob disperse into small parties, doing illegal acts (as he cannot be in all places at once), so depute his power to constables or other inferior peace officers to follow the rioters, after the act has been once read so as to authorize the military to act out of his presence, either to apprehend the rioters for what they have before done or for their being then about illegal acts? And can they

follow them into another jurisdiction? Can they also do this if the riot act has not been read?" — "If the mob divide itself in the manner suggested by this quere, we think that the constables may follow them with different detachments of the military, and use the necessary force for preventing them from committing illegal acts, or apprehending them to answer for any such illegal acts which they may have committed or be in the act of committing: we think that the constables may do this of their own authority as such, but that it will be more prudent for the magistrates to attend personally, where it is practicable, and to give directions to the constables where it is not. The authority of the justices extends over the whole county, and that of the constables to the districts for which they are appointed; but we have no doubt in saying that both the justices and constables will be justified in following a mob thus assembled into another jurisdiction, and there resisting it as if within their own. In this case it will be advisable to make as speedy application as may be to the particular justices and constables of the place, but in the mean time not to relax their own efforts, but to act in all respects as within their own limits. This case is wholly independent of the riot act, but in cases to which that act is applicable they have the same power."

*Fifth.*—"May the magistrates appoint constables at their pleasure, and how are they to be appointed? And can constables be appointed for the whole county? Can they appoint any of the military to be constables?"—"Magistrates may appoint special constables at their discretion, by administering to them the usual oath of constables, and being so appointed, such constables may act as such in all cases. Any person may be appointed constable, but whether it be advisable to appoint any of the military to that office is not a subject for our consideration."

*Sixth.*—"Would it be prudent, in case of great necessity, for the military to act in the absence of the magistrates and peace officers?"—"The duty of the military is the same as that of all subjects; and they are alike bound to use the means in their power to maintain the public peace, though in the absence of magistrates and constables. The prudence of their acting must depend on the occasion; and, in cases of great necessity, we have no doubt in saying that they ought so to act."

ROBERT DALLAS.

V. GIBBS.

JOHN LENS.

HENRY TRIPP.

*Taunton, March 30, 1801.*

(A true copy.)

# PRICES OF CORN WHICH GOVERN EXPORTATION FOR APRIL, 1801.

Districts.	WHEAT.				BARLEY.			
	April 4.	April 11.	April 18.	April 25.	April 4.	April 11.	April 18.	April 25.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1,	149 11	149 8	152 5	146 7	70 0	65 3	62 8	62 8
2,	154 5	149 10	157 3	154 9	61 10	63 7	61 8	58 5
3,	140 7	140 1	138 8	138 5	65 3	58 10	57 0	56 2
4,	129 3	131 7	131 2	121 3	75 4	77 2	77 10	75 0
5,	138 11	139 4	139 1	130 9	81 5	83 2	81 1	81 7
6,	151 1	160 3	147 4	142 0	98 11	103 10	97 5	97 2
7,	158 11	151 9	153 3	150 0	86 8	93 5	86 11	88 5
8,	147 5	150 7	154 2	150 7	105 7	109 0	112 10	111 9
9,	141 8	143 11	144 2	151 6	97 10	102 8	100 6	104 2
10,	177 4	177 9	173 10	171 1	109 2	95 5	97 11	95 7
11,	153 2	131 5	115 4	121 1	96 6	84 5	64 9	58 2
12,	170 7	170 4	169 11	165 9	86 11	86 8	84 10	85 6
13,	—	—	135 11	—	—	—	69 11	—
14,	—	—	132 0	—	—	—	77 6	—
15,	—	—	137 3	—	—	—	67 6	—
16,	—	—	119 0	—	—	—	59 8	—
17,	—	—	136 6	—	—	—	72 9	—

Districts.	OATS.				BEANS.			
	April 4.	April 11.	April 18.	April 25.	April 4.	April 11.	April 18.	April 25.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1,	43 2	39 7	37 5	33 2	62 2	60 8	60 11	59 9
2,	40 2	39 11	38 0	35 3	62 5	61 9	63 8	60 9
3,	42 10	41 11	41 6	39 0	65 6	73 3	58 6	57 0
4,	40 6	40 7	40 6	37 6	79 0	80 0	77 6	72 0
5,	46 11	46 8	46 9	43 10	79 7	78 2	74 11	73 5
6,	62 8	65 2	60 2	59 6	79 7	78 2	74 11	73 5
7,	61 8	59 3	58 8	59 5	91 8	89 5	85 0	83 11
8,	56 5	58 7	57 9	57 3	108 6	115 4	108 6	102 6
9,	39 10	39 4	43 1	40 0	79 7	78 2	74 11	73 5
10,	47 5	40 9	39 7	44 8	83 9	86 5	95 6	83 7
11,	39 10	37 6	37 5	37 8	79 7	78 2	74 11	73 5
12,	46 1	46 11	48 1	46 6	81 4	78 11	78 9	67 4
13,	—	—	51 0	—	—	—	88 5	—
14,	—	—	53 9	—	—	—	96 0	—
15,	—	—	53 2	—	—	—	85 5	—
16,	—	—	48 9	—	—	—	77 8	—
17,	—	—	49 9	—	—	—	82 0	—



AVERAGE PRICES OF CORN FOR  
APRIL, 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	Wheat.		Barley.		Oats.		Beans.	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	18	5	8	4	5	0	7	8
Middlesex,	20	2	9	0	5	7	7	7
Surry,	20	4	9	3	5	6	8	7
Hertford,	17	7	8	10	5	5	8	7
Bedford,	17	7	10	4	4	11	9	1
Huntingdon,	18	3	10	8	4	6	8	3
Northampton,	16	9	10	0	4	4	7	11
Rutland,	16	5	10	7	4	8	9	2
Leicester,	17	6	11	3	5	2	10	2
Nottingham,	17	7	10	9	5	11	10	0
Derby,	17	7	10	3	6	9	10	11
Stafford,	17	5	11	6	6	10	10	9
Salop,	21	5	13	7	6	2	13	9
Hereford,	22	2	13	6	6	0	11	5
Worcester,	22	2	12	11	5	11	11	4
Warwick,	20	9	13	5	6	6	11	4
Wilts,	20	6	11	0	5	5	10	6
Bucks,	19	10	8	11	5	4	9	5
Oxford,	19	9	9	8	5	7	9	6
Berks,	17	9	10	1	5	8	7	10
Brecon,	22	1	14	7	6	0	—	—
Montgomery,	19	3	11	8	5	9	—	—
Radnor,	18	10	12	7	5	0	—	—

MARITIME COUNTIES.

Essex,	18	2	8	8	5	1	7	8
Kent,	18	8	8	5	5	1	7	7
Sussex,	19	9	8	8	5	2	8	4
Suffolk,	19	10	7	8	5	2	7	6
Cambridge,	17	11	7	6	3	10	7	6
Norfolk,	17	4	7	5	5	2	7	11
Lincoln,	15	7	10	1	4	8	9	11
York,	16	3	9	0	5	3	10	0
Durham,	17	6	11	5	6	1	—	—

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
Northumberland,	16	3	9	5	5	6	—	—
Cumberland,	17	11	12	2	7	10	—	—
Westmoreland,	20	1	13	2	7	5	—	—
Lancaster,	19	4	11	0	7	7	10	10
Chester,	18	7	12	10	6	11	11	3
Flint,	—	—	—	—	—	—	—	—
Denbigh,	19	11	14	10	7	1	13	7
Anglesea,	—	—	12	6	—	—	—	—
Carnarvon,	17	8	12	5	6	6	—	—
Merioneth,	18	7	14	0	7	6	—	—
Cardigan,	17	1	12	2	4	6	—	—
Pembroke,	16	11	11	9	4	8	—	—
Carmarthen,	18	11	14	9	4	8	—	—
Glamorgan,	20	8	12	11	6	3	—	—
Gloucester,	22	8	12	1	5	4	10	11
Somerset,	21	0	11	5	5	2	10	0
Monmouth,	21	11	14	4	4	11	—	—
Devon,	16	6	8	8	4	10	—	—
Cornwall,	16	0	9	7	4	6	—	—
Dorset,	21	2	10	7	6	0	7	9
Hants,	21	1	10	3	5	9	9	9
General average,	18	11	11	0	5	8	9	6
Jan.	17	2	10	1	5	5	9	9
Feb.	17	8	10	5	5	7	10	1
March	9	3	11	0	5	9	10	0

---

## ANNALS OF AGRICULTURE.

---

### ON THE WAGES OF LABOURERS IN HUSBANDRY.

*Extract of a Letter from a Country Clergyman.*

**Y**ou are very well aware, Sir, that the mode of making up the deficiencies of the wages of day labourers in agriculture by the means of parochial relief is not at all peculiar to the parish or to the district in which I live; it has been practised many years, though perhaps in different degrees, in many other parts of England, and the practice has been sanctioned by the Legislature itself. No peculiar blame, therefore, rests upon any particular parish for making use of a mode of proceeding so generally adopted, and enforced by such high authority. Nor has it been suddenly introduced in this parish, or even in the memory of the present set of parishioners. It had been my wish

VOL. XXXVII. No. 210. H

to trace the first origin of this principle of parish administration, and to mark, if possible, some, at least, of its intermediate steps; but the information which I have obtained from the books of the parish has not been sufficient for that purpose. The only safe inference which I have been able to draw from the parish accounts is this: that in the years 1730 to 1734 no parochial relief was delivered out for the maintenance of day labourers in agriculture, cases of sickness and accident being alone excepted.

On this ground I will venture to contest the truth of two propositions which have sometimes been advanced; the first of which is the following, namely, that the price of daily labour in agriculture will always find its level with the price of the prime necessities of life.

I would controvert that proposition by the following brief considerations, namely, 1st, It seems to be now almost generally understood that the statute of 5 Elizabeth was enacted in order to repress whatever was exorbitant in the demands of labourers and husbandmen, consequently it appears probable that wages of labourers were at that time higher than the maintenance of the labourer and his family necessarily required. 2ndly, It appears probable that, in some parts of England at least, wages were still sufficient to maintain labourers and their fami-

lies as lately as the year 1730. 3rdly, In our own times, even in those years when wheat has been sold at 6s. a bushel, very few labourers who had families could maintain them without some assistance from the parish. And, 4thly, At the time at which I write, when good wheat is sold in London and at many of the country markets at 20s. or a guinea a bushel, it is observable that the parish relief amounts to sums unknown in any other time, and that wages have experienced very little or no change whatever in many places during the present calamitous scarcity: whereas, if the proposition had been true in all cases, wages ought to have doubled, if not tripled, within the last two years, if we consider the great increase of the prices of bread corn, of butchers' meat, of beer, soap, salt, and candles, and of all articles of clothing, of which none is more indispensable than shoe leather; and probably it happens in many parts of England, as well as here, that a week's wages will not buy a single pair of shoes.

The proposition here combated has received considerable support from the intimation which has been held out that it was a direct corollary from the general result of Dr. Adam Smith's book on the 'Wealth of Nations.' Dr. Adam Smith's very ingenious and very useful book contains, in the octavo edition, about 1450

pages, and of those 1450 pages he has dedicated less than 40 to the subject which we are now considering. I do not wish to state what may be the Doctor's sentiments upon the whole, but rather recommend the eighth chapter of book first to the attentive perusal of every one who wishes for information. I content myself with the following quotations: "Masters must  
" generally have the advantage in disputes  
" (concerning wages) with their workmen.  
" Masters are always and every where in a sort  
" of tacit but constant and uniform combination  
" not to raise the wages of labour above their  
" actual rate. This combination we seldom  
" hear of, because it is the usual, or, as one  
" may say, the natural state of things, which  
" nobody ever hears of. The combinations of  
" masters are conducted with the utmost silence and secrecy till the moment of execution; and when the workmen yield, as they  
" sometimes do, without resistance, though severely felt by them, they are never heard of  
" by other people."

It might, however, be further observed on the subject of Dr. Adam Smith, that the drift of his book is principally directed to the advantage of capitalists: it tends to teach men already possessed of a capital how they may place it and manage it in such a manner as to in-

crease it to the greatest degree possible. His subject therefore did not lead him directly to consider either the pecuniary interests or the general happiness of the larger class of men who have no capital to dispose of. He was induced to write the chapter on wages by another consideration, namely, how far the profits of capitalists would be affected by wages. Yet, as he was a man of humanity, he could not treat the subject, however incidentally he had taken it up, without some reference to the comforts of the lower classes of the community. It would probably have given pain to his mind if, on a closer investigation, he had come to be persuaded that the increasing profits which attend very large capitals are principally derived from the comparative depreciation of labour, or, in other words, from the diminished comforts of the labouring poor. Thus much, at least, we may say with safety, that, whatever we may conceive to have been the Doctor's opinion, his authority would certainly have been greater with us in this part of his subject if he had discussed it at a time when the increase of the price of the prime necessities was as prominent as it is at present: if he had derived his information from a country where the effects of parish rates upon wages had been as perceptible as they are at present in England; and where he could have seen

in practice, as well as in theory, the depreciation of wages which necessarily results from the discovery of shorter methods of operation, and from the introduction of various and expensive machinery, such as were either undiscovered in his day, or were unattainable by the limited capitals then introduced into husbandry.

The second proposition which I endeavoured on a former occasion to confute is the following, namely, that, provided day labourers are really paid to such an extent as to be maintained, it is of little consequence to any one whether they are paid by their employer adequately under the name of wages, or whether they are paid by their employer inadequately in wages, provided the deficiency be made up afterwards by some other means, *ex. gr.* by parochial relief. I endeavoured to state some of the consequences which usually result from the latter mode of proceeding, as they may affect the masters or employers, as they may affect the parish expenditure, as they may affect the labourers themselves, and, lastly, as they may affect the parishioners individually who are assessed in the rates. On each of these heads something, I am convinced, much more complete might have been offered; but probably very little which will not easily suggest itself to any person who frequently attends the vestry



of his parish, and who is desirous of observing the mechanism of this subordinate kind of government. To the above-mentioned heads, it would add one more, namely, the consequences which this kind of administration produces in the internal arrangement of farmers' families. Day labourers are in effect the servants of farmers, but they are distinguished from those who usually bear that name by this circumstance—that they are never lodged and seldom boarded by the farmer: it therefore becomes the interest of a farmer who lives under that form of administration to keep few, if any, men servants in his house, and even to diminish as much as possible the number of women servants by employing boys and day women about the house, who are paid on the same low scale of wages; the deficiency of which wages comes afterwards to be made up to them in the same manner in which it is made up to the ploughman, the hedger, the thresher, and others, *i. e.* by the overseer of the parish, under the different denominations of rent, firing, clothing, and occasional relief, even in the most favourable times, and by extraordinary weekly allowances in times of scarcity and calamity.

In considering how unequally the overseers' rates press at present upon the parishioners individually, I adverted principally, if not solely,

to the cases of greater and smaller occupiers of arable land ; those cases were sufficient for the purpose I had then in view, as the comparison afforded me one proof of inequality. On more continued reflection, I am now convinced that several more instances of that inequality may easily be adduced, some of which I here subjoin, at the same time that I purposely omit some others, because their operation does not fall within the sphere of my observation.

In order to take a more distinct view of the subject, I will beg leave to suppose that the overseers' rate for the current year may amount in this or some other parish to such a sum as 12s. in the pound on all assessable property ; and, as before, I continue to consider all the persons relieved as being separable into two classes, the former of which I call paupers, or disabled poor, meaning by that name all the persons described in the statute of 43 Elizabeth, c. 2. s. 1. under the denomination of very poor and impotent, and not able to work, or poor and impotent, and not able to provide for himself and his family. See Burn, vol. III. p. 753 and 754. ed. 17th, 1793. The other class, of able-bodied poor, I shall continue to call day labourers ; they are contradistinguished from the preceding class in these particulars, that they are able to work, that they are willing to work, and

really do work, but are not able by their utmost exertions to provide for themselves and their families. It would perhaps be a task of no small difficulty in any parish to discriminate exactly, unless accounts are very regularly kept, what sum of money is expended yearly in the relief of each of these classes : but as no very high degree of accuracy is required for the present argument, I will further suppose, that in a parish where the whole expenditure amounts to 12s. in the pound, the expence required for the maintenance of the paupers, if taken separately, would require a rate of 4s. in the pound; and that the expence required for the relief of day labourers, if taken separately, would require a rate of 8s. in the pound.

Let us now consider in what manner the rate of 8s. in the pound, which I will call the *day labourers' rate*, falls upon some of the different kinds of occupation which are assessed in this rate,

It will easily be observed that arable farms require a greater quantity of labour than dairy or grazing farms; that woods demand still less; and the dwellings of small tradesmen, such as generally inhabit villages, furnish no employment for agricultural labourers whatsoever. In an arable farm of about 100l. a year the occupier may perhaps employ in the culture of his

land, &c. about four men throughout the year; these four labourers, together with their families, would, in the year 1730, have been completely maintained by the day wages of that time, whatever that rate of wages was. In the years 1800 and 1801 the occupier pays wages at the rate of 14 or 16d. a day, and pays moreover to the overseer, for his contribution to the labourers' rate, 8s. in the pound on 100l. a year, i. e. he contributes to the common stock for the maintenance of labourers 40l. within the year; in consideration of which payment of 40l. or 10l. per man, he is secured by the parish from any further demand from his labourers on the score of wages.

The occupier of 100l. a year may not improperly be called a great farmer when his interests are compared to those of an occupier of 20l. a year. But an occupier of 20l. a year employs no labourer, nevertheless he will be assessed to the labourers' rate at 8s. in the pound on 20l.; i. e. he will be obliged to pay 8l. a year towards the maintenance of the labourers of the parish; in consideration of which payment he is secured likewise from any further demand on the score of wages, i. e. as he has no labourers to make any demand; he pays 8l. a year to the parish, for which he receives no equivalent whatsoever.

The occupier of a dairy farm, situated in a parish where the greater number of farms are

arable, has also his comparative hardship. In a dairy farm of 100l. a year the occupier may perhaps employ in the management of his farm about two men throughout the year, nevertheless he will be called upon to contribute to the common stock for the maintenance of labourers 40l. within the year, and in consideration of this 40l. or 20l. per man, he will be secured by the parish from any further demand from his two labourers on the score of wages.

Woods are also assessable to the rates of the parish as well as arable and pasture land, and in these less labour is required than on either of the preceding kinds of property; the underwood of which is usually cut every ten, twelve, or fourteen years, and the labour of very few men for the space of six weeks will clear several acres of underwood; in the intermediate time little labour is required except occasionally repairing the fences. We shall not under-rate the quantity of labour if we say that a wood assessed at 100l. a year would occasion as much work as would employ one man uniformly during the twelve years. The occupier of wood, assessed at 100l. will pay 40l. a year to the common stock for the maintenance of labourers, and in consideration of this payment of 40l. a year, he will be secured by the parish from any further demand on the score of wages from his one labourer.

In villages the dwellings of small tradesmen are also assessed ; these dwellings are of no very great rent, and in reality they are frequently rated at less than their value ; on an average they cannot be fairly stated at more than 5l. a year. They employ no labourers, nevertheless they are called upon to pay to the common stock for the maintenance of labourers at the rate of 8s. in the pound, *i. e.* they will be required to pay 40s. a year to the stock for the maintenance of labourers, from which payment they derive no benefit, no equivalent whatsoever.

If I might be permitted to consider the parish stock as the bank of an insurance office at which all kinds of landed property were obliged to insure in order to secure the public against the raising of the wages of day labourers, the terms of the comparative advantage or disadvantage of the kinds of property considered above might be stated in the following manner :

*First.*—With regard to occupiers who have some return or something of an equivalent.

The occupiers of arable land of 100l. rent insure yearly at the rate of 10l. per man.

The occupiers of pasture land 20l. per man.

The occupiers of wood land 40l. per man.

The return or equivalent gained in each of these cases is the security against the the raising of wages.

*Secondly.*—With regard to occupiers who have no such equivalent.

Little tradesmen whose rent may be 5*l.* and whose receipts from their business may exceed 60*l.* a year, 2*l.* a year.

Occupiers of arable land of 20*l.* a year, whose receipts cannot much exceed 60*l.* or three rents, 8*l.* a year.

This pressure upon the smallest occupiers of land is of all the most oppressive in it's principle and the most ruinous in it's effects, because it falls upon a class of men who are the least able to bear it; for as small occupiers are always obliged to bring their produce to the most early, and on that account generally the lowest, markets in the year, they seldom dispose of it except under great disadvantage, even in times of the least difficulty; and in times of calamity and scarcity, like the present year, there are seldom any of the smaller farmers who have any bread corn to dispose of at all, and many of those who have families are under the necessity of purchasing it for their own domestic consumption. Perhaps it may not be an extravagant conjecture to venture, if one were to affirm that if the small farmers should remain under a pressure of poor's rates for ten years to come equal to the pressure which they have experienced during the last ten years, that so useful and respectable a set of

men must necessarily be exterminated entirely in many districts of the kingdom, and many respectable fathers and mothers of families would themselves become objects of that charity which they had been ruined to support; their farms would, on the first vacancy, be purchased by neighbouring gentlemen or by opulent farmers; and eventually, by the entire suppression of small occupations, every hope would be taken away from the labouring poor of ever bettering their condition by renting and cultivating a few acres for their own comfort and advantage.

These, Sir, are some instances of the inequality of the pressure of parish rates, and some of the consequences which are either directly or indirectly connected with them; they become apparent by considering closely and by comparing together two stages or epochs in the history of our national agriculture; the former of which existed in some districts of the kingdom about the year 1730, at which period not only uncommon industry but ordinary labour found in it's wages a reward sufficient for the maintenance of the labourer and for his family. The latter of these epochs has existed for many years past, in which wages have been gradually becoming more insufficient for those purposes; and in years of public scarcity of corn, and years of great dearth of all the prime necessities of life, that



inadequacy is become very prominently apparent. The means of supplying this defect by parochial relief is become a source of great hardship and inconvenience to all ranks of people, those only excepted who from very extensive capitals and very large occupations are enabled to draw to themselves a very large share of the increased profits which attend their situation.

One consideration more I beg leave to add, which I have occasion to observe to be taking place daily in the minds of labourers. They cannot but observe, especially from the operations of a late act of Parliament, that industry and maintenance are every day in their case less and less connected; it becomes every day less and less an object with them whether they receive 14d. in wages, or receive 18d. neither the one or the other can form any considerable part of their maintenance; therefore the labourer is now more indifferent concerning his wages than I have ever before observed. As that indifference increases the master or employer will not be behind hand in the advantage he can derive from it; and without taking into consideration the obvious effects which might be brought about by collusion, it seems highly improbable that wages can ever again receive an augmentation, whatever may be the price of the necessities of life, but we must rather look to the pro-

spect of a daily decrease in wages, and to the consequent augmentation of pressure upon the fund of the parish.

### THE SHOOT IN CATTLE.

*Hallwood, near Frodsham,  
Cheshire, April 19, 1801.*

SIR,

**W**ITHOUT any other introduction to you than the pleasure and improvement which I derive from your very useful publications on agriculture, I feel satisfied you will excuse this address; and as I have no doubt but you must frequently have witnessed the ravage committed upon cattle by that dangerous bowel complaint known amongst farmers by the appellation of *Shoot*, I shall make no apology for communicating to you a recipe, which, as far as I know, was never used by any other person, and which, during the three years that I have practised it, has cured many beasts of my own and my neighbours, and I believe never, when regularly given, failed of success. As soon as the beast is perceived to be attacked, *bleed* to the quantity of from three to one pint, according to strength

and condition, and administer every other night for six nights, keeping the beast during that time on dry food, the following recipe: one ounce liquid laudanum, half an ounce sal volatile, one pint rice water.

A wish, Sir, to render this medicine as useful as possible is my motive for offering it to you, and if you think it of sufficient import to insert in your 'Annals,' it cannot fail of being generally known, and I should hope as generally made trial of; by which practice I am confident many hundred head of bullocks will be annually preserved to their respective owners and the community. I must add, in some cases, where the disease has been of long continuance, I have thought it necessary to increase the dose to one and a *half* ounce of laudanum. The quantity that I have prescribed is adapted for a three-year-old or upwards, for younger it must be proportionably diminished.

And now, Sir, as it will not give you much more trouble, and I am already mounted on my agricultural hobby, I beg leave to remit to you the statement and result of the sowing, &c. of two fields; by which practical lesson I mean to show that late sowing, when rendered necessary by wet weather or other adverse circumstances, may not only be safely but successfully prac-

VOL. XXXVII. No. 210. I

tised, and that it is at all times the interest of the cultivator to wait patiently and sow his land in condition, although the season may have advanced many weeks beyond that time laid down in his agricultural calendar. In August, 1799, I took my present farm. On one of the fields in question I then saw growing a miserable crop of wheat, over-run with couch and knot grass, and other weeds. I agreed with the occupier to plough under the wheat stubble in November. The following March (Lady day) I entered on the farm; and as soon as the field was sufficiently dry, I cross ploughed, rolled, and harrowed it, and gathered and carted away many loads of the before-mentioned weeds; but not being satisfied with it's condition, and being obliged to lay the field down for pasture, I persevered in the same round, viz. ploughing, &c. as described, four times; by which tedious courses and wet weather the season was so protracted that the oats were not sowed until the 7th and 8th of June. The oats made their appearance the 9th day, and were mowed perfectly ripe on the 9th of September, the crop very good, 40 bushels of 38 quarts per acre; the soil strong, impoverished loam, on a cold, retentive subsoil and nearly flat surface: a more unlikely field for a good crop could not have been fixed upon, or a better proof of the good effects of

pulverization or cleansing from weeds be easily met with. By any ordinary culture this field would not have produced 20 bushels of oats per acre. The field contains eight acres, so that at the price I sold these oats (10s. the bushel) last spring, the extra culture paid me 80 pounds, besides the additional manure made from the increased quantity of straw, and the field probably benefited for some years to come. Thus I wish to encourage my brother farmers never to plough or work strong retentive soils but when thoroughly dry, or, from impatience, to sow out of condition, as I have clearly proved, as far as one experiment goes, that oats may be sowed with great success even so late as the 8th of June. The other field, ten acres, I found under oats, sowed on fresh-broken-up land after one ploughing; the field a fine, strong loam, in excellent heart, having been, I was informed, previously grazed 17 years. This field, as the other, was ploughed in November; the following spring it was set with potatoes, without manure (a fair crop, about 300 bushels per acre): but at the getting-up season the autumn was so very wet that, in conformity with my constant practice on strong soils, I waited to have the field in a proper state (sufficiently dry for working) until the 20th of November, between which day and the 29th the field

was sowed with wheat. On the following day a hard frost commenced, and continued with little intermission during the two following months, so that the wheat did not appear until the 17th, 18th, and 19th of February. The crop turned out exceedingly fine, 47 bushels per acre (worth as much as the land it grew on). Here is another instance of the success attending the waiting for a favourable, though very protracted season. The land was harrowed as soon after the potatoes were cleared from the ground as the field became *thoroughly dry*. The seed was then sowed broadcast,  $1\frac{1}{2}$  bush. per acre, (a quantity I never exceed) and ploughed under, in four-foot butts, with as shallow a furrow as possible. And here let me observe, I never make use of any steep or preparation for the seed, from a thorough conviction, founded on experiment, of it's inutility. Good, plump seed, thoroughly winnowed and cleaned, never disappoints me; and precludes every possible trouble of brining, liming, &c. a system certainly useless. I was principally induced, Sir, to give you this second account by the following reflection in your "Annals," vol. XXI. page 10: "This field was sown with wheat, but the time of sowing was inevitably protracted to a late season. In a cold climate and on a light soil never sow wheat after potatoes, but ridge up

“ your land and leave it for a spring crop ; and  
“ perhaps on *any soil* it is good husbandry so to  
“ do.” My field is in a very cold situation, exposed to the east, and by no means sheltered from the north or west, I therefore judged the foregoing fact interesting ; and it may perhaps encourage some noviciate in husbandry to sow wheat even late after potatoes, when prevented by adverse weather, &c. from an earlier culture, and who at the same time might otherwise have been discouraged by the very ingenious gentleman’s opinion above quoted, and by a declaration I see of your’s, that you “ never got a good crop of wheat after potatoes.” From the wetness of last autumn, and the very retentive subsoil on my farm, I did not finish my wheat sowing on my potatoe land until December 24th, yet I have no doubt of an excellent crop ; and at the present period I think it of most material consequence to encourage a potatoe crop instead of an unproductive fallow, and to show the farmer, by practical fact, that he need not be afraid of his sowing being a few days, or even weeks, retarded by the operation of getting up the potatoes. One experiment was tried at the same time, as I wished to determine what depth in that soil was the most eligible for depositing the seed. Six butts were dibbled on the same day by gauges of the fol-

lowing depths, 1, 2, 3, 4, 5, 6 inches; two seeds were dropped into each hole and covered with hand rakes: result, the wheat appeared above ground as numbered, but there was not more than ten days between the appearance of the first and sixth butt. During their course there was not the slightest visible difference or preference to be given to the 1, 2, 3, and 4-inch butts, but not more than one fourth of the seeds of the 5, and only one half of the seeds of the 6-inch butts ever reached the surface. Thus it is evident, as far as one trial, that six, and even five inches is too deep in a strong soil, and that from one to four inches is the best depth for depositing the seed. Here, Sir, I shall conclude by saying this letter is much at your service, if you think it can be of the smallest use to any husbandman; and if such a plain, practical farmer as myself can give you any local or other information, I shall at all times think myself fortunate in doing so, as I request permission to add I consider my profession in particular, and your country in general, much indebted to you for your very able and disinterested exertions.

I am, Sir, with great respect,

Your most obedient servant,

W. H. WORTHINGTON,



## PROPOSAL FOR A COMMUTATION OF TITHE.

*Navy Pay Office, March 11, 1801.*

**T**HE same arguments which were urged with a force that brought conviction home to almost every mind against equalizing the present land tax may also be urged against those who complain of the heavy load tithes are upon the landed interest. The farmer considers the tithe he shall have to pay when he bargains for his farm, and the rent is diminished in proportion; wherein then consists the hardship to which he is subject by the levying of tithe? Again, the landlord considers how much his rent will be abated by the farmer on account of tithe, and in proportion to the degree that his rents are lessened so does he lessen the price he offers for an estate, or so did his ancestors, which is the same thing; wherein then consist the hardship and loss to which he is subject by the levying of tithe? The truth is, the farmer, after having bargained for his farm with a view to the payment of tithe, complains of this payment, and misleads himself with an idea of how much he would have made by his bargain but for this payment: in this, however, he is mistaken, for if there was no tithe to pay the landlord would

exact a higher rent, and his situation would be the same. The case of the land owner is similar: he or his ancestors paid a reduced price for his estate because of the reduction of his rent which the tithe occasions, and yet he complains of this reduction; whereas if tithe had not been levied he would have paid more for his estate, and his situation in both cases would have been the same.

The clergy have as good a claim to tithe, according to every principle of justice and every right of property, as the farmer to the profits of his lease or the land owner to the rent of his land; and nothing but a wish to obtain an increase of property without an exertion of labour or ingenuity, or the practice of economy, can be the cause of the clamours which individuals have raised against tithe, or of the spirit of disputing the just and legal claims of the owners of tithe, which of late have been so common: but though the interested complaints of individuals are unfounded, the levying of tithe, in a national point of view, is in a great degree impolitic, because the amount levied is varying with the uncertain bounty of nature, and also because it operates as a tax upon the investment of capital in the improvement of land and on the exertions of skill and labour.

If, therefore, any plan can be suggested that

shall provide the clergy and other owners of tithe with incomes equal to those they now possess, and which shall rise and fall with the incomes of the landed interest, which provision shall be paid by those who now pay tithe, and in the same proportion, and yet shall neither check improvement nor damp the exertions of skill and industry, it does not appear to me that any objections could be urged against the change as encroaching upon the rights of property; and it is very clear the state would benefit by the alteration in the animation it would give to the spirit of improvement, in the life it would infuse into the exertions of the farmer, and in the harmony it would restore or perpetuate between the clergy and their parishioners.

Suppose that within a given time every person or body corporate deriving an income from tithe not levied by a perpetual modus should be empowered to demand the actual rent of the lands from which they receive tithe on an average of a certain number of years, and the considerations given for the different leases of any such lands, the term of the lease and the length of such term unexpired; the equivalent yearly rent in room of such consideration is easily obtained and added to the rent paid. When the total amount of the rents of the lands whence such person or corporation derives tithe is thus

obtained, let an account, upon a similar average of years, of the tithe received from such lands be produced, and the proportion which the tithe bears to the rent, or it's rate in the pound, be cast; and then let a deed be drawn up and deposited in some public register, say that of the court of Chancery, and instead of the tithe let such proportion of rent and of the yearly equivalents for the considerations of leases be levied.

The following objections have been urged against this proposal.

That some parishes would pay a greater rate in the pound than others.—Now let it be remembered that I set out upon the ground of those who at present pay tithe to pay this equivalent, and in the same proportion, because I did not consider tithe as a burthen upon individuals; but as a check upon national improvement; before, therefore, this objection can be admitted as valid, my first argument concerning tithe must be overturned.

That the rents of the landlord would be exposed to the receivers of tithe, which some think would be a very great hardship.—The objection, if good in any case, is equally valid against the registers of Ireland, Yorkshire, and Middlesex, and the entries at the Custom House: experience has shown that these are not productive of

inconvenience, why, therefore, should there in this case be any such fear apprehended from the disclosure of rent, which, by the way, is already disclosed by the provisions of the income act?

That those who now receive tithe would then be at the mercy of the land owner.—But in so much as the land owner in all cases would receive more than such persons who are now entitled to tithe do or would, there seems little cause for entertaining fears that any one would suffer by the exchange of a tithe of produce for an equivalent proportion of rent.

That incomes derived from tithe are now less in bad seasons and greater in good ones; but by this plan they would be the same in all.—One end, however, proposed by this alteration is the doing away the variations to which a tithe of produce is subject, and which causes it's collection to be so vexatious.

On the whole, then, these objections do not appear to me to be valid against the proposal; and it is clear by it, that the incomes of those who now receive tithe will be the same as at present and will vary only as the incomes of the landed interest vary, that the equivalent will be paid by those who now pay tithe and in the same proportion, and that the drawing of such revenue from land will no longer check improvement nor operate as a tax upon skill

or industry; consequently, without violating the rights of property or injuring any individual, a very great national benefit would follow its adoption.

DANIEL WAKEFIELD.

P. S. I read with much satisfaction, in the papers of this morning, a motion made last night, by Sir H. St. John Mildmay, in the House of Commons, relative to tithe, which embraces the principles of the foregoing plan, and promises to be of much benefit. I admire his proposed bill the more because the alteration it will introduce violates no private right, and promises to *gradually* do away the inconveniences with which the present mode of collecting tithe is attended.

---

## OXEN MUCH INFERIOR TO HORSES,

*Banham Haugh Farm,  
near Diss, Norfolk.*

SIR,

I TAKE the liberty of addressing you on a subject which I think is now become a very important one, and which ought to engage the attention of farmers in general; I mean as to the utility and practicability of substituting oxen for the purposes of agricultural labour instead of horses.

The Minister, in laying an additional tax on our horses, seems to think it a measure of good policy, as it may lead to a diminution of the number of horses, and increase the use of oxen ; and Mr. Rose is inclined to exult in a tax which may in the end, according to his opinion, tend to a great national advantage, should the practice of using oxen generally prevail. With this idea Ministers seem to have it in contemplation, by multiplying the duty on horses, to *compel* us to adopt a very important change in our system, the advantages of which ought first to be *clearly* ascertained both to the farmer and the public, and Government ought to be well satisfied as to the good policy of the measure before it says to the farmer, If you will not of yourself adopt the use of oxen we will force you to do it.

From the great length of time you have been engaged in agricultural pursuits, you must have heard much argument on both sides the question, and, if I mistake not, have had some experience in the comparative merits of the two animals as labourers, and therefore I do not know any body so well qualified fully to investigate the measure and to clear up the difficulties, which, to a Norfolk and Suffolk farmer, appear insurmountable in the use of oxen.

Suppose it were admitted that oxen could be maintained at a smaller expence than horses, it

must on the other hand be acknowledged that horses perform their work with far greater agility, and that the extra ploughing a pair of horses will do in the week will fully pay the difference of keeping. But let us fairly examine the nature of their keeping; that is, the nature of the food requisite for the different animals, although I think this is far from the first consideration which ought to be attended to where the labour gained is equivalent to the additional expence (if there is any) of keeping horses.

I have heard it asserted by the advocates for the use of oxen, that it is only necessary to unyoke the beasts and turn them into a straw yard without any farther thought or trouble; but will any rational man give credit to such an assertion? However, suppose it were really the case that they would perform work with such keeping, what miserable contrivance it would be to keep a parcel of half-starved creatures to eat up all the straw; and what would be the value of manure made in this way? But all whom I have conversed with on the subject are of opinion with myself that not even the ox can perform constant labour without proper feeding to enable him to go through with it; and if no turnips can be spared in the winter for the labouring beasts, they must have an ample allowance of hay, if not corn, and therefore when the accounts are



compared, I suppose there will appear no great difference in the expence between keeping horses and oxen, if it is meant they are both to perform an equal degree of labour.

It is unnecessary to make any comparison between the dexterous and useful qualities of the two animals, for it must be obvious to every one that in this respect horses claim a decided preference.

Where are servants to be found who will work oxen after having been accustomed to horses? And suppose the general use of oxen was a desirable thing, from whence are the farmers of Norfolk and Suffolk to be supplied? And, lastly, where would be the great advantage derived from it to the public? For my own part, I can see no advantage the public would derive from it. If it is supposed the quantity of animal food would be increased; I am quite of a different opinion. Every person conversant with agriculture knows that it is the practice of the farmer (on farms favourable for feeding) to allot a portion of his hay and turnips for the purpose of grazing, and he is supplied with beasts for this purpose from the breeding countries; therefore, whilst he can procure as much lean stock as he has an opportunity of fattening, the public cannot lose any thing. So far from increasing the quantity of animal food, would not the demand for

lean beasts for a different purpose considerably raise the price of them? And the fact that not one more could be fattened, must be admitted; perhaps the reverse, because oftentimes a portion of the food now raised for the purpose of fattening beasts I fear would be found necessary to recruit the labouring oxen. If I am mistaken in my judgment respecting the matter I should wish to be corrected. I think when we are called on, and in a manner required to acquiesce in a measure of great importance, the advantage resulting from it ought to be clearly made out; and you, Sir, would render the cause you have long been engaged in a most essential service by taking this matter under your consideration, and by giving in your useful 'ANNALS' correct statements, where trials have been made, to ascertain the advantages to be derived from the use of oxen: but if, instead of advantages, the *reverse* should result from experiments of this kind, you will, I am sure, assist in correcting a mistaken idea which is likely to operate to the prejudice of the farmer to an unforeseen extent.\*

I am, Sir,

Your obedient humble servant,

SAMUEL TAYLOR.

\* I particularly call on my correspondents who have a good opinion of oxen to come forth on the present occasion and answer this sensible farmer.

A, Y.

EXTRACT FROM BYGGE'S TRAVELS  
IN THE FRENCH REPUBLIC.

PAGE 23 TO 29. 12MO. EDITION, 1800.

WHEN a person compares the condition between Sealand, Fülmen, Falsters, Laalands, Langelands, and Jylland twenty-two years ago with the present state of these provinces, it must yield the highest pleasure to every benevolent mind to mark the progress which Denmark has made in the intervening period. The roads were scarcely passable. Barren wastes presented themselves in every direction. The little spots of land which were cultivated, after lying fallow for a year, scarcely produced a moderate crop of corn; and meadows and pasture ground were in the same state. At present the roads intersect the country in almost every direction, the scattered cottages are collected into hamlets, and the face of the country is entirely changed for the better. In many places, it is true, bond service prevented the peasant from devoting the smallest time or labour to his own little field; and some acted on that false and miserable maxim, *That it was better to increase than to diminish the number of large farms.* The boors were localized, and confined

VOL. XXXVII. No. 210. K

to the very spot on which they first drew breath.

The Government saw and lamented the impolicy and inhumanity of such a system; and, in 1768, the ministry began to remove these impediments by the improvement of the commons, which the very law itself impeded. The government published an ordinance in which the advantages of enclosures and the cultivation of the soil were set forth; but this had not the force of law. Proper land surveyors and land inspectors were appointed to make allotments of the different parcels of the commons, some of which were scattered here and there; but prejudice and selfishness presented difficulties which gave rise to such discontents and ill will as threatened to frustrate the best-digested plans, and to render every attempt of the kind abortive. It required the strongest arguments and examples, particularly on Bernstoff's manor and Koldinghouse, to convince the peasants of the utility of the measure, and that it was much better that each should have his lot to himself than in common with others. As the advantages of the measure began to be discovered, most of the peasants wished that their portions should be measured off, so that each might be put in possession of his own.

By an order on the 23d of April, 1781, his Majesty, through the Exchequer, commanded

an entire abrogation of the partnership in commons and waste lands ; so that as soon as the allotment desired by any one should be made out, the rest should not be allowed to object to it, but that a general plan should be laid down which should include the whole, a measure which became afterwards generally agreeable. This difficult task was imposed in too great haste. It required the greatest consideration to form rules for the surveys and taxation, and for the arrangement of the whole scheme. Many land surveyors and land inspectors were employed, and each was previously obliged to give a specimen of his qualifications for his department. From the moment that this important measure was adopted, it was carried on with the greatest zeal, and with unabating industry ; so that about two thirds of the peasants of Denmark at this moment feel it's beneficial effects. A number of these little farms are now in good heart, and many of the peasants enjoy them rent free.

Government itself, in Copenhagen, Fredericksbourg, and Kronbourngh, has set a laudable example. The bonds of servitude are now relaxed, and bond service is limited in every part of the kingdom. In several provinces, particularly in Jylland, many of the great landed proprietors have let their estates in small farms to the peasants, at an easy rent. The pleasing re-

sult is visible in almost every place you see, and in every countenance you meet. Whatever road you take through Denmark, you see commodious and well-built cottages, gardens, cultivated grounds, rich meadows, fine cattle grazing in clover fields, and, above all, a hale, healthy peasantry. Yet, after all, agriculture is far from being brought to that height of prosperity it is capable of in Denmark; at which, however, there is every prospect that it will one day arrive.

When we reflect that all this was begun in the auspicious reign of Christian the Seventh, who had the power and the will to promote such useful regulations; and when we also reflect on the prejudice and obstinacy of the peasants, who shut their eyes to their own interest, and seemed to hug their chains, it is surprising that even the patience, prudence, and wisdom of the Government could surmount all these difficulties, the removal of which has produced the happiest effects all over Denmark. Such another instance is not to be met with in the economic history of any other state: that in the space of forty years barren wastes should be divided and converted into fertile fields, that every peasant should have his own farm and build his own house, that bond service should be limited or altogether abolished, that large farms should be

divided into small ones, that the chains of servitude should be relaxed, and that some peasants are become the lords of that soil they formerly cultivated as bondmen! It is with pleasure that I look back to my youthful days, when, from 1765 to 1767, as head surveyor of the Exchequer, I had some small share in the original execution of this important work.

---

SOMERSET.

TAUNTON LENT ASSIZES, 1801.

We, the Lord Lieutenant, Grand Jury, and Magistrates of this County, now assembled at Taunton,

UNANIMOUSLY DECLARE,

1. **T**HAT we will use our best endeavours to alleviate the distress arising from the present scarcity.

2. That after this public assurance it is expected that all persons will carefully avoid any tumultuous assembly for the future, as the Lord Lieutenant and Magistrates will take the most vigorous and effectual measures for repressing any tumultuous or riotous meetings of the populace which may hereafter occur, being satis-

fied that they proceed only from the wicked views of bad and designing people.

3. That the Magistrates are determined to punish with the utmost severity of the law all persons in any way preventing grain, flour, bread, or any other species of provision whatever from being brought to market ; or attempting by violence or intimidation to compel those who bring their commodities thither to sell them under the market price.

4. That the farmers, dealers, and others concerned may rely with the utmost confidence on being protected in the most complete manner by the Lord Lieutenant and Magistrates, in their persons and property, from all violence whatever.

5. And whereas divers ill-disposed persons, with a design to disturb the public peace, and to set at nought the King and his Government, have availed themselves of the distress arising from the dearth of corn at this crisis, to execute their evil designs by stirring up the lower class of people to acts of public outrage, under pretence of obtaining a reduction of the price of provisions : and whereas in the execution of such designs unlawful oaths have been administered to many deluded labourers and artificers, binding them to engage to disturb the public peace, for the furtherance of such pur-



poses as aforesaid, contrary to the common statute laws of the land; the Lord Lieutenant and Magistrates have thought it expedient to give this public notice to all persons whomsoever, and particularly to those concerned in such unlawful confederacies, that by a statute made and passed in the 37th. year of the reign of his present Majesty, against administering or taking unlawful oaths, it is enacted as follows:

That ("whereas divers wicked and evil-disposed persons have of late attempted to seduce his Majesty's subjects from their duty and allegiance to his Majesty, and to incite them to acts of sedition, and have endeavoured to give effect to their wicked and traitorous proceedings, by imposing upon the persons whom they have attempted to seduce the pretended obligation of oaths unlawfully administered") any person or persons who shall in any manner or form whatsoever administer or cause to be administered, or be aiding or assisting at, or present at, and consenting to the administering or taking of any oath or engagement purporting or intended to bind the person taking the same to engage in any seditious purposes to disturb the public peace, or to be of any association, society, or confederacy formed for any such purpose, or to obey the orders or command of any committee or

body of men not lawfully constituted, or of any leader or commander, or other person not having authority by law for that purpose, or not to inform or give evidence against any associate, confederate, or other person, or not to reveal or discover any unlawful combination or confederacy, or not to reveal or discover any illegal act done or to be done, or not to reveal or discover any illegal oath or engagement which may have been administered, or tendered to, or taken by such person or persons, or to or by any other person or persons, or the import of any such oath or engagement, shall, on conviction thereof by due course of law, be adjudged guilty of felony, and may be transported for any term of years not exceeding seven years. And every person who shall take any such oath or engagement, not being compelled thereto, shall, on conviction thereof by due course of law, be adjudged guilty of felony, and may be transported for any term of years not exceeding seven years.

**Sect. 2.** That compulsion shall not justify or excuse any person taking such oath or engagement, unless he or she shall, within four days after the taking thereof, if not prevented by actual force or sickness, and then within four days after the hindrance produced by such force or sickness shall cease, declare the same, together with the whole of what he or she shall know

touching the same, and the person or persons by whom, and in whose presence, and when and where such oath or engagement was administered or taken, by information on oath before one of his Majesty's justices of the peace, or one of his Majesty's principal secretaries of state, or his Majesty's privy council.

Sect. 3. That persons aiding and assisting at, or present at and assisting to the administering or taking of any such oath or engagement as aforesaid, and persons causing any such oath or engagement to be administered or taken, though not present at the administering or taking thereof, shall be deemed principal offenders and shall be tried as such, although the person or persons who actually administered such oath or engagement, if any such there shall be, shall not have been tried or convicted.

And the said Lord Lieutenant and Magistrates do hereby warn all persons who may have been led astray by the wicked machinations of such ill-designing persons, to desist from the execution of such unlawful engagements, which are in their nature void, as tending to overthrow all government, and to dissolve the bands of society: And all Magistrates and peace officers are hereby enjoined and required to use their utmost endeavours for the apprehension of such offenders as aforesaid: And all laymen of every de-

scription, from the age of fifteen to sixty years, are hereby commanded to be aiding and assisting the said Magistrates and peace officers in discharging their duty as aforesaid, as they will be answerable for the contrary thereof at their peril.

POULETT, *Lord Lieutenant,*  
JAMES BERNARD,

*Foreman and a Magistrate.*

Taunton, March 30, 1801.

## EXPERIMENT WETHER HOG SHEEP.

THE following is an account of the weight of three one-sixteenth Spanish and the other part Dorset, and three three-quarter Spanish and the other part Dorset, sheep, weighed alive; and also of their wool.

July 19, 1798, 7 o'clock in the evening, bellies full.

No.		1-16th Spanish.		3-4ths Spanish.
		lb.		lb.
1	—	86	—	82
2	—	78	—	62
3	—	77	—	61
		<hr/>		<hr/>
		241		205
		<hr/>		<hr/>

# AGRICULTURE.

139

July 20, 1798, 9 o'clock in the morning, bellies empty.

No.	1-16th Spanish.		3-4th Spanish.	
		lb.		lb.
1	—	82	—	78
2	—	73	—	57
3	—	72	—	57
		<hr/>		<hr/>
		227		192
		<hr/>		<hr/>

September 5, 1798, nine o'clock in the evening, bellies full.

1	—	88	—	88
2	—	76	—	67
3	—	82	—	66
		<hr/>		<hr/>
		246		221
		<hr/>		<hr/>

September 6, 1798, half after eight o'clock in the morning, bellies empty.

1	—	83	—	81
2	—	75	—	61
3	—	73	—	62
		<hr/>		<hr/>
		231		204
		<hr/>		<hr/>

On the 17th of September three Dorsets were put with them, for another experiment.

September 17, 1798, seven o'clock in the evening, bellies full.

No.	1-16th Spanish. lb.	3-4th Spanish. lb.	Dorset. lb.
1	92	84	88
2	84	64	82
3	82	66	82
	<u>258</u>	<u>214</u>	<u>252</u>

September 18, 1798, eight o'clock in the morning, bellies empty.

1	87	81	85
2	79	60	79
3	79	61	79
	<u>245</u>	<u>202</u>	<u>243</u>

May 29, 1799, six o'clock in the evening, bellies full.

1	94	82	100
2	82	64	died giddy
3	91	68	86
	<u>267</u>	<u>214</u>	<u>186</u>

# AGRICULTURE.

141

May 30, 1799, eight o'clock in the morning, bell  
lies empty.

No.	1-16th Spanish. lb.	3-4th Spanish. lb.	Dorset. lb.
1	90	75	93
2	76	61	
3	86	62	82
	<hr/>	<hr/>	<hr/>
	252	198	175
	<hr/>	<hr/>	<hr/>

From eight o'clock in the morning till five  
o'clock in the evening, in good grass.

1	97	82½	101½
2	82½	64	
3	93	68	88½
	<hr/>	<hr/>	<hr/>
	272½	214½	190
	<hr/>	<hr/>	<hr/>

June 20, 1799, weight of the above sheep's wool.

No.	1-16th Spanish. lb. oz.	3-4th Spanish. lb. oz.	Dorset. lb. oz.
1	3 8	5 2	3 15
2	3 12	4 0	
3	3 4	4 2	2 15
	<hr/>	<hr/>	<hr/>
	10 8	13 4	6 14
	<hr/>	<hr/>	<hr/>

Folded near all the winter, and lived very hard  
on the hill.

February 21, 1800, seven o'clock in the evening,  
took from the hill on very hard keep, bellies  
full.

No.	1-16th Spanish.		3-4th Spanish.		Dorset.	
		lb.		lb.		lb.
1	—	120	—	85	—	107
2	—	103	—	73		
3	—	104	—	79	—	99
		<hr/>		<hr/>		<hr/>
		327		237		206
		<hr/>		<hr/>		<hr/>

February 22, 1800, half after twelve o'clock,  
bellies empty.

1	—	111	—	79	—	100
2	—	96	—	68		
3	—	97	—	73	—	93
		<hr/>		<hr/>		<hr/>
		304		220		193
		<hr/>		<hr/>		<hr/>

Let into good grass, to fill their bellies, and  
then weighed the same day.

1	—	122	—	88	—	110
2	—	105	—	76		
3	—	105	—	81	—	92
		<hr/>		<hr/>		<hr/>
		332		245		202
		<hr/>		<hr/>		<hr/>



# AGRICULTURE.

143

June 20, 1800, weight of the foregoing sheep's wool.

No.	1-16th Spanish.		3-4th Spanish.		Dorset.	
	lb.	oz.	lb.	oz.	lb.	oz.
1	4	2	5	3	3	4
2	4	10	5	3		
3	3	11	5	3	3	2
	<hr/>		<hr/>		<hr/>	
	12	7	15	9	6	6
	<hr/>		<hr/>		<hr/>	

February 5, let into a piece of very good grass before weighing three hours.

February 5, 1801, one o'clock in the afternoon, bellies full.

No.	1-16th Spanish.		3-4th Spanish.		Dorset.	
	lb.	oz.	lb.	oz.	lb.	oz.
1	—	176	—	118	—	145
2	—	158	—	95	—	
3	—	159½	—	110	—	136
	<hr/>		<hr/>		<hr/>	
	493½		323		281	
	<hr/>		<hr/>		<hr/>	

February 6, 1801, one o'clock in the afternoon, bellies empty.

No.	lb.	oz.	lb.	oz.	lb.	oz.
1	164	0	104	0	132	0
2	146	0	83	0		
3	144	0	98	8	124	8
	<hr/>		<hr/>		<hr/>	
	3)454	0	3)285	8	2)256	8
	<hr/>		<hr/>		<hr/>	
Average	151	5½	95	2½	128	4
	<hr/>		<hr/>		<hr/>	

Two years' wool weighed together.

1-16th Spanish.	3-4th Spanish.	Dorset.
lb. oz.	lb. oz.	lb. oz.
3) 22 15	3) 28 13	2) 13 4
<u>      </u>	<u>      </u>	<u>      </u>
2) 7 10 $\frac{1}{2}$	2) 9 9 $\frac{2}{3}$	2) 6 10 $\frac{1}{2}$
<u>      </u>	<u>      </u>	<u>      </u>
3 13	4 12 $\frac{1}{2}$	3 5

It appears from the foregoing account that there will be one third weight of mutton more in the one-sixteenth Spanish than in the three-quarter Spanish, and about one fourth more in the Dorset than in the three-parts Spanish; but two pounds of the former sorts of wool are not worth above one of the latter, could it's full value be had.

I am, Sir,

Your most obedient servant,

FRANCIS FURBES.

Henlade, Feb. 11, 1801.

To J. W. Parsons, Esq.

# THE COTTAGER'S GARDEN CALENDAR.

**JANUARY.**—If the weather be very open, about the middle of the month, sow radishes and parsley. Plant mazagan, or long-pod beans. Sow hotspur pease. Plant cabbages. Transplant cabbages marked for seed. Prune apples, pears, plumbs, cherries, gooseberries, currants, &c.

**FEBRUARY.**—Plant eschalots and chives. Plant Windsor and long-pod beans. Sow marrow-fat pease. Transplant fruit trees. Transplant leeks, parsnips, and carrots for seed. Sow carrots and parsnips. Plant early potatoes. Procure a few field turnips, and transplant for seed. Sow savoy and cabbages for autumn. Fruit trees may still be pruned.

**MARCH.**—Sow radishes. Graft. Plant stocks of fruit trees to bud and graft upon. Sow onions, leeks, parsley, carrots, and parsnips for a principal crop. Plant dry onions for scallions. Sow turnips. Plant cuttings of gooseberries and currants. Plant potatoes.

**APRIL.**—Sow early kidney beans, and savoy and cabbages for a late crop. Plant slips and cuttings of pot herbs, rosemary, rue, and camomile.

VOL. XXXVII. No. 210. L

**MAY.**—Sow a full crop of kidney beans. Plant out cabbages and savoys for winter, and brown or bore cole. Sow scarlet beans. Plant mint. Stick pease. Thin fruit trees.

**JUNE.**—Thin carrots, parsnips, and onions. Plant full crops of savoys and cabbages, if omitted last month. Prick out brown cole. Sow turnips.

**JULY.**—Transplant brown cole. Gather seeds as they ripen.

**AUGUST.**—Transplant savoys and cabbages for February. Take up onions, garlic, and eschallots, as the tops wither. Sow early cabbages soon in this month. Clip hedges.

**SEPTEMBER.**—Gather apples and pears.

**OCTOBER.**—Fruit trees may now be moved.

**NOVEMBER.**—Take up carrots and potatoes. Prune apples, pears, &c. Plant cuttings of gooseberries and currants, and transplant them.

**DECEMBER.**—Dig and trench all spare ground,

#### GENERAL OBSERVATIONS.

In dry and warm weather take care to water the seed beds and plants lately moved. Secure the seed beds and pease from birds. Destroy insects. At all times keep your garden clean from weeds, especially your crops of carrots, parsnips, and onions. Cut only a small part of the potatoes with the eyes for planting, the re-

maining part may be saved for use ; two eyes in each set are enow.

Dig the ground as soon as the autumn crops are taken off, and lay it up in ridges, that it may have the benefit of the frost.

It is of great profit to keep bees, three hives being often worth as much as your rent, and requiring but little attention ; they should be watched when they swarm, and the hive must be covered from the snow and sleet in winter and from the heat of summer.

The produce of the garden will be in proportion to the care taken of it. Do not waste any thing that can be converted into manure. Keep the hogsties clean ; the hogs improve more, and the garden is enriched. To the mine of dung from the sties add the decayed leaves of the vegetables and what the hogs will not eat, such as the soot and ashes from the chimney and fire, the suds from the washing tub, the sweeping from the floors of the house, cuttings of weeds from the side of the roads, with all other articles which will make manure. Thus, at the same time that every thing about you is kept clean and tidy, you will be well paid for your care.

## SECOND REPORT

OF THE COMMITTEE OF THE HOUSE OF COMMONS  
APPOINTED TO CONSIDER OF THE PRESENT  
HIGH PRICE OF PROVISIONS.

**H**AVING received from the Board of Agriculture a report, made in compliance with the request of the Committee which sat during the last session, respecting the best means of encouraging the growth of potatoes, your Committee have taken the same into consideration; and, as they concur in general with the Board in the principles laid down therein and (with a few alterations) in the mode of encouragement proposed, beg leave to lay the report before the House, as containing the grounds of their resolutions; and they further submit, that the advanced state of the season makes it desirable that as little delay as possible should occur in carrying them into effect, in case the wisdom of the House should think it proper to adopt them. The said resolutions are as followeth, viz.

*Resolved*, That it is the opinion of this Committee, that that part of the united kingdom called Great Britain be divided into twelve districts; and that premiums, not exceeding in the whole the sum of 12,000*l.* be offered for the

cultivation of potatoes by proprietors and occupiers of land not being cottagers.

*Resolved*, That it is the opinion of this Committee, that the following premiums be granted in each district, viz. to the person who shall in the present year cultivate on land now in his occupation, which has not been used as potatoe or hop ground, or yielded any arable crop during the last seven years, the greatest number of statute acres of potatoes, producing on an average not less than 200 bushels per acre, each bushel weighing not less than 60lb.

The number of acres not being less than 30	£. 300
For the next greatest number, not being less than 20 acres	200
For the next greatest number, not being less than 10 acres	100
For the next greatest number, not being less than 7 acres	70
For the next greatest number, not being less than 6 acres	60
For the next greatest number, not being less than 4 acres	40
For the next greatest number, not being less than 3 acres	30
To the next ten greatest number, not being less than 2 acres each, 20l. each, making	- - - - 200

*Resolved*, That it is the opinion of this Committee, that premiums to the amount of 13,000l. be offered for the encouragement of the culture of potatoes by cottagers in England and Wales, to be distributed in sums not exceeding 20l. for each district or division, in which magistrates act at their petty sessions in their several counties; and that such day labourer, artificer, or manufacturer, being a cottager in each of the

said districts or divisions, who shall raise on land in his occupation in the present year the largest average crop of potatoes per perch:

In not less than 12 square perch of land	-	-	£. 12
To the second largest crop on ditto	.	-	- 6
To the third largest crop on ditto	-	-	- 4

*Resolved*, That it is the opinion of this Committee, that a sum, not exceeding 3,000l. be granted for encouraging the cultivation of potatoes by cottagers, in that part of the united kingdom called Scotland, in such sums and under such conditions as may be approved by the Board of Agriculture.

*Resolved*, That it is the opinion of this Committee, that a sum, not exceeding 2,000l. be granted to the Board of Agriculture for the purpose of being distributed by them in honorary premiums to such owners or occupiers of land as shall allot the greatest quantities of land among cottagers, this year, to be planted with potatoes, in portions of not more than three fourths nor less than one fourth of a statute rood.

---

#### APPENDIX. NO. I.

#### *Report from Board of Agriculture, respecting the Culture of Potatoes.*

THE Board of Agriculture, in obedience to the requisition of the Committee of the House



of Commons, having taken into consideration,  
 " Whether any and what premium on the cul-  
 " tivation of early potatoes would be likely to  
 " be attended with beneficial effects;" also,  
 " What regulations and conditions it may be  
 " proper to prescribe in granting any such pre-  
 " mium;" beg leave to report as follows:

The object of the Committee seems to be the  
 production of *early* potatoes.

This expression will apply either to *early* sorts,  
 or to any sorts, provided they be brought into  
 consumption at an early season.

The sorts which are called *early* from the time  
 of their completing their growth become ripe  
 and their stalks die in June, July, or August.  
 But these sorts are not greatly productive in  
 quantity, and may be considered rather as an  
 article of luxury than as an object of ge-  
 neral consumption: nor for that purpose can  
 a sufficient quantity of seed be at this time  
 procured.

*Secondly.*—But potatoes may be brought into  
 early use by being gathered before they arrive  
 at maturity. The Board does not conceive that  
 the Committee would wish to sanction this prac-  
 tice by parliamentary premiums; as nothing  
 short of real distress can justify the consump-  
 tion, in July or August, of one hundred bushels  
 from an acre of land, which in October might

produce double the quantity, and of a quality more fit for human food.

For these reasons the Board cannot recommend premiums for *early* potatoes in either sense of the word.

Neither, upon full consideration, can the Board advise the granting of premiums for the growth of potatoes on land which is already in tillage and destined for other crops; they conceive that the object in view may be attained without having recourse to that expedient.

Having cleared their way by these inquiries, the Board took into their consideration the expediency and effect of parliamentary premiums to procure an extensive growth of *common* potatoes.

That some peculiar encouragement is necessary appears from the common opinion, that the potatoe is a root more than ordinarily exhausting, and from the culture being on that account not generally permitted by landlords in several parts of the kingdom.

Nor, in the case of a too plentiful supply, can the crop be preserved for the chance of rising markets (though methods for drying and preserving them have been successfully practised under the sanction of the Board). Some powerful instigation, therefore, seems necessary to raise a crop, fully adequate to the present exi-

gency, of an article, on the cultivation of which large expences are unavoidable.

It appears also to the Board, that the production of an increased quantity of potatoes in the months of September or October, may be almost equally advantageous to the public as if the same were produced at an earlier period. It may in some measure prevent the necessity of immediately using the new crop of wheat for consumption and for seed at the same time, and when, for many reasons, it may be disadvantageous to thresh out more wheat than is absolutely necessary.

The price of wheat may also by these means be prevented from rising, at a moment when it is peculiarly desirable to see it confined to it's natural level.

For these reasons the Board strongly recommends the granting of premiums for extending the culture of the common sorts of potatoes.

In this respect they have two objects in view: the one to encourage the culture among farmers and occupiers on a great scale, the other to be restricted to cottagers who may have or may procure gardens or small pieces of ground.

These measures, taken together, seem likely to ensure the object of the Committee; but by the *last* the Board conceives that the condition of the cottager may be permanently ameliorated,

and that he will be inclined to continue a practice from which he will receive so great a relief under the present pressure.

If it be objected that the present high price is of itself a sufficient encouragement to the growth of potatoes, it may be observed, that it's immediate operation is to increase, particularly to the cottager, the difficulty of obtaining seed, and that the expectation of a plentiful wheat harvest, both from the favourable season and from the breadth sown, may make potatoes, at all times an expensive culture, in the present year an hazardous one.

It may further be observed, that the public will not sustain any loss by the amount of the premiums given for potatoes, inasmuch as the smallest difference which may be reasonably expected in the price of that article by an extended cultivation will relieve the classes most in want to a much greater amount than the value of the premiums expended can burden others.

Impressed with these ideas, the Board begs leave to recommend to the consideration of the Committee as follows:

That the part of the united kingdom called Great Britain, be divided into twelve districts, (vide appendix II. page 160); and that the following premiums, to the amount of 12,000*l.* in the whole, be offered for the cultivation of potatoes

by proprietors and occupiers of land, not being cottagers :

*District Premiums.*

To the person who shall in the district, No.

in the present year, 1801, cultivate on land now in his occupation, which has not yielded any arable crop during the last seven years, or been used as hop ground, the greatest number of acres of potatoes, producing on an average not less than 200 bushels per acre, each bushel weighing not less on an average than 60lb. - - - £.300

For the next greatest number of acres - 200

For the next ditto - - - 100

For the next ditto - - - 70

For the next ditto - - - 60

For the next ditto - - - 40

For the next ditto - - - 30

And to the ten persons who shall cultivate

the ten next greatest number of acres,

20l. each - - - 200

---

£.1,000

---

Which will give 204 as the number, and 12,000l. as the total amount of district premiums.

*Conditions.*

It is required that the persons intending to become candidates for these premiums shall give notice of such their intention to the

before the 20th day of  
May next, naming the parish, hundred, and county in which the land is situated. Certificates, by a sworn surveyor, of the measure of the land, and by the manager, steward, or bailiff, of the land not having been tilled for seven years preceding, or used as hop ground; and also of the produce and weight of the potatoes, and the time of taking them up, to be transmitted on or before the first day of December to the

That premiums to the amount of 12,780*l.* be offered for the encouragement of the culture of potatoes by cottagers in England and Wales, being 20*l.* for each hundred or other subdivision, (vide appendix III. page 161); and also 3,000*l.* for that part of the united kingdom called Scotland, in such sums and on such conditions as may be thought proper.

*Cottagers' Premiums.*

To the day labourer, artificer, or manufacturer,  
being a cottager in the hundred of  
and county of                      who shall raise on

land which is now or may be* in his own occupation, in the present year 1801, the largest average crop of potatoes per perch of 16½ feet square, in not less than 12 square perch of land						£.10
To the second ditto	-	-	-	-	-	6
To the third ditto	-	-	-	-	-	4
						<hr/> £.20 <hr/>

*Conditions.*

It is required that the cottager who intends becoming a candidate, shall give notice thereof to the officiating minister of the parish, who shall transmit the same to one of the acting magistrates of the districts; and that the cottager do bring proof of the produce of the crop before the magistrates for the hundred, at their petty sessions or other meetings: such magistrates being required to examine into the same, and transmit the names and places of abode of the applicants whose proofs shall be by them deemed satisfactory, with the amount of their respective crops, to the clerk of the peace for the county, and by him to be transmitted to the

\* The Board mentions "Land which is or may be" in the possession of cottagers, in the expectation that many gentlemen will apportion to them parts of young plantations and other land.

That, with a view to furnish employment to labourers in situations where it may be wanting, three general premiums, amounting in the whole to 2,000*l.* be offered for the kingdom at large.

*General Premiums.*

To the person in that part of the united kingdom called Great Britain who shall in the year year 1801 cultivate the greatest number of acres of potatoes, not less than 20, on land which shall not have been in tillage for the seven years preceding, or used for hop ground, (the whole being once thoroughly dug with the spade) and producing on an average not less than 200 bushels per acre, weighing on an average 60 lb. each - - - - - *£*.1,000

For the next greatest number of acres not less than 15 - - - - - 600

For the third ditto not less than 10 - - - - - 400

---

*£*.2,000

*Conditions.*

The candidates for these premiums to give the same notice and produce the same certificates as are required in the first class, and also an account of the expence of digging the ground.

---

As the saving of seed is an object of the greatest importance for extending the culture



of potatoes, the Board desires to remark, that it has been ascertained by experiments that the eyes of potatoes cut out with a semicircular-edged scoop, so as to leave the larger part for common consumption, may be used advantageously for that purpose, provided such eyes be planted on a mellow soil. When they are cut out they should be kept thinly spread, or in small heaps, and moved from time to time till the piece cut out becomes dry and contracted; after which they may be kept in larger parcels without danger of fermentation, and in this state may be preserved safely through April or May.

The Board has further to observe, that should the premiums for cottagers be approved of by the Committee, advertisements should immediately be printed, and affixed to every church and chapel door in the kingdom.

They also beg leave to subjoin to their report another plan (appendix iv. page 162) for extending the cultivation of potatoes, which has been suggested by a distinguished Member of their Board, and which they consider as well worthy of the attention of the Committee.

BOARD OF AGRICULTURE,

Feb. 12, 1801.

CARRINGTON, President.

## APPENDIX, NO. II.

*Division of Districts.*

1. Monmouth, Hereford, Wales.
2. Devon, Cornwall.
3. Somerset, Dorset, Hants, Wilts, Gloucester.
4. Kent, Sussex, Surrey, Berks, Middlesex.
5. Norfolk, Suffolk, Essex, Herts, Cambridge, Bedford.
6. Huntingdon, Northampton, Warwick, Oxford, Bucks.
7. Northumberland, Cumberland, Westmorland, Durham.
8. York, Lancaster.
9. Lincoln, Nottingham, Derby, Leicester, Rutland.
10. Chester, Salop, Stafford, Worcester.
11. 12. Scotland.

APPENDIX, NO. III.

*Division of Hundreds.*

				Brought up	
Bedford	-	-	9	Leicester	- - - 423
Berks	-	-	20	Rutland	- - - 6
Bucks	-	-	8	Lincoln	- - - 5
Cambridge	-	-	17	Nottingham	- - - 30
Chester	-	-	7	Warwick	- - - 8
Cornwall	-	-	9	Worcester	- - - 5
Derby	-	-	6	Stafford	- - - 7
Devon	-	-	33	Salop	- - - 5
Dorset	-	-	34	Hereford	- - - 15
Durham,	Wakes	4		Radnor	- - - 11
Essex	-	-	20	Brecknock	- - - 6
Gloucester	-	-	30	Glamorgan	- - - 6
Monmouth	-	-	6	Carmarthen	- - - 10
Hants	-	-	19	Pembroke	- - - 6
Herts	-	-	8	Cardigan	- - - 7
Somerset	-	-	42	Montgomery	- - - 5
Wilts	-	-	29	Merioneth	- - - 7
Surrey	-	-	13	Carnarvon	- - - 6
Sussex	Rapes	6		Anglesea	- - - 6
Kent	Lathes	5		Denbigh	- - - 1
Oxford	-	-	14	Flint	- - - 12
Middlesex	-	-	7	Lancaster	- - - 5
Suffolk	-	-	22	York	- - - 6
Norfolk	-	-	31	Westmorland	Baronies 28
Huntingdon	-	-	4	Cumberland	Wards 2
Northampton	-	-	20	Northumberland	Wards 5
<hr/>				<hr/>	
423				639	

It is necessary to observe on this list of hundreds (for which the Board has no other authority than maps) that the division it forms of the kingdom is extremely unequal, some of the hun-

VOL. XXXVII. No. 210. M

dreds being very small, and others of considerable extent; but the Board was induced to adhere to it, from the consideration that if the Magistrates should be considered as proper persons to determine the claims of cottagers, the districts for which they act will form the proper division.

---

## APPENDIX, NO. IV.

MY LORD,

*Sobo Squart, Feb. 3, 1801.*

As your Lordship has done me the honour to desire me to specify in writing the particulars of the proposal I made this morning at the Committee of the Board of Agriculture, I have attempted to execute your commands: I must premise, however, that the proposal originated with a practical farmer, who communicated it to me, and to whom of course all the credit is due, if any credit shall attach itself, in the opinion of the Board, to the project.

It may fairly be deduced, from the exorbitant prices at which every article of consumption is now sold, that the quantity of human food produced by the island is at present insufficient for the supply of it's inhabitants; it is natural therefore to search for every possible means of increasing the produce of the earth; but in many

of our projects, when we have actually devised the means of a material increase in some one production, we are stopped by recollecting that the certain consequence of this increase will be a diminution in the produce of another article, perhaps equally necessary; thus an encouragement, by expensive premiums, of the growth of potatoes on arable land, will necessarily increase the price of barley, a grain that must next year be above it's proportional value; and if confined to sward, will risk an enhancement of the price of butter, cheese, flesh, and every other production of pasture land, all of which are already exorbitantly high.

One resource, however, of no inconsiderable extent, remains free from this objection, and this is the common-field lands of the unenclosed parishes, which by the customary mode of culture, derived from remote antiquity, are suffered to remain fallow every third or fourth year, and are during those periods of little value to the proprietors, or to any other part of the community, it being the right of all the occupiers to use them in common, even during the time the proprietors are by repeated ploughings and by the application of manure in the autumn preparing them for the next year's crop.

It was formerly believed that land under cultivation would not continue to produce crops un-

less allowed to rest occasionally, and the fallowing system is still practised by many respectable farmers; but the best-informed and most intelligent cultivators have long ago given up this unthrifty management, and in light soils especially it appears to be universally allowed, that arable land will continue in an unimpaired state, if not in a progressive course of improvement, provided it regularly receives from the cultivator the whole of the manure produced upon it.

If this be true, which repeated observations and some experience induce me to believe, our open-field lands may without hazard be allowed to produce a crop in the years when custom now compels them to lie fallow; and as the quantity of open field land in the island is admitted to be very large, the amount of this resource is certainly very extensive, nor does there appear to be any difficulty in compensating those whose rights will be invaded by this measure, for the benefit the proprietors of common-field lands will receive by it's being carried into effect is so great that they will be able, and no doubt willing, to pay more for the liberty of cropping their fallows than the cottagers and other persons having right of common upon them can possibly lose by being deprived of their customary occupations.

The rent of common-field land is generally

between 10s. and 20s. an acre ; and in calculating this rent allowance is always made for the intervening year of fallow, for which the farmer is not charged with rent because he cannot in that year reap a crop. The value of common right over a fallow field, from the time when the harvest is gathered in to that when the succeeding crop is sown, is never rated at more than 1s. 6d. or 2s. an acre ; and this small benefit is actually divided between the occupiers and the cottagers, whose rights to use the common together are equal ; the farmer, therefore, is amply able to give, and the cottager will, under the present pressure of the times, be willing to receive a proper compensation. This may be given either in a money payment, in a quantity of corn or potatoes previously agreed upon, or in the still better mode for cottagers, that of giving to each a portion of land to be cultivated at his leisure time, and a sufficiency of potatoes to plant it.

The principal objections to the measure appear to be, that potatoes are generally esteemed an exhausting crop ; and that the fallows which ought by this time or very soon after to be ploughed up for the proper culture of potatoes are not always turned over till after the Lent seed time.

To the first I beg leave to answer, that although every crop that leaves little behind it on

the land must be allowed to exhaust, yet potatoes, which remain so short a time in the land and keep the surface during the whole of the summer sheltered from the effects of heat by their leaves, exhaust less, probably, than any similar crop, and this more especially when long dung is used, on which they prosper very well; for long dung will not be completely rotten when the potatoes are taken up, and of course a considerable portion of it's nutriment is preserved for the benefit of the succeeding crop; indeed, whatever dung is used, if the quantity is sufficient, it's virtue will not in the short period between May and September be exhausted, as is evident from good crops of wheat being always produced after well-manured potatoes; and it is surely quite indifferent whether dung rots or rather ripens into a state fit to become the food of vegetables in a dunghill, or in the ground under a crop of potatoes. The necessity of the fallows being speedily turned over, argues only the necessity of speedily passing the act, if the measure be approved by the Board and the two Houses of Parliament.

A temporary act for the encouragement of planting potatoes on fallow lands, accompanied by a recommendation and proper instructions from this Board, would, in times like the present, produce a powerful effect throughout the



kingdom; and is, probably, the most natural way to remedy the temporary deficiency we at present experience, by affording a plentiful supply of that useful vegetable between the time of the next harvest and Christmas, before which time wheat cannot be thrashed with advantage to the proprietor.

I confess I have little concern on the subject of our supply of corn for two or three years to come: the enormous prices we have of late paid will certainly encourage both the farmer and the landlord to increase very materially the tillage of the island; the present scarcity I attribute chiefly to the very inadequate prices of 1797. If the price of corn when it settles is permitted to be sufficiently high, there is no doubt that this island will afford an ample supply for it's inhabitants, as it has always done after two years of high prices have made the farmer believe that he will not till the land without an adequate recompence for his labour and expence.

In order, however, to render the benefit of this project permanent, by allowing farmers to use the same advantageous courses of crops upon common plough fields as they do on their enclosed farms, by which they will materially increase both the animal and the vegetable food of the people, the six-years act, as it is called, 13 Geo. III. ch. 81. which recognizes the prin-

ciple I recommend, should be amended, the term of the duration of an agreement under it's provisions much enlarged, and powers given not only to compel the refractory to accept an adequate compensation, but also to a smaller majority to compel a minority, generally either ill informed or ill disposed, to benefit themselves and the public in despite of the little piques and insignificant dissensions of a country village.

I am, my Lord,

With due respect and real esteem,

Your Lordship's obedient

and very humble servant,

JOSEPH BANKS.

*The Rt. Hon. Lord Carrington, &c. &c. &c.*

POTATOES.

*Pensbury House, near Sleafisbury,*

SIR,

*March 31, 1801.*

ON the first of January last I did myself the honour of addressing a letter to you, containing an account of a successful experiment made by me last year, for the purpose of producing two crops of potatoes from the same land the same year.

The mode I adopted was, about six weeks before my earliest potatoes were expected to be ripe, to plant some cuttings or eyes of potatoes about *one inch* distant from each other, so that they occupied about from a sixteenth to a twentieth of the space they do in ordinary planting. By the time mentioned they had attained the height of five or six inches, when they were transplanted into a space from whence the first crop of potatoes had been dug for use. They throve well, and on the second of November were taken up and weighed in the presence of two respectable gentlemen; the product was after the rate of 84 sacks (of 240lb.) per acre.

When the first crop was planted I had no such experiment in contemplation, and consequently it was not made to the greatest advantage. The first crop (not being of a very early

sort nor planted earlier than common) was not fit to dig till the beginning of August, whereas there are three sorts of potatoes which become dead ripe by the middle of June, viz. the Early Prolific (by some, I believe, called the Golden Dun), the Lambstone Kidney, and the Red-nosed Kidney. Some of these sorts, therefore, should be *preferred* for the first crop, and planted as early as possible; for if they happen to be cut down by frost, the experiments of Mr. Wimpey prove ('Bath Papers') that they will shoot again and produce a tolerable crop.

The second crop may consist of any of the common sorts, one of which, however, but lately introduced here, I cannot help wishing to see extended, it is called the May Duke, or Red Kidney. It is a pink, or blossom-coloured, oblong potatoe, very full of eyes (so that a few will furnish a large quantity of sets), is an excellent bearer, of a most delicious flavour, and this spring (1801), when almost all other potatoes are watery and ill-tasted, is as dry as flour; and, I have little doubt, is infinitely more nutritious both for men and *cattle* than most other potatoes. It seems to keep well, since I do not perceive (though it is now the 31st of March) that it has the smallest tendency to chimp out, yet it becomes excellent for the table early in the autumn.

The mode by which I proposed to obtain a plenty of sets with the *least possible loss to the public* was to direct all keepers of prisons, hospitals, and workhouses (these being under control) to cut off the two ends, or two of the eyes of each potatoe they dressed, and preserve them in dry coal ashes. These sets would keep good from Christmas onward to the times of planting; and, if that were an object, would probably yield as much as the potatoes originally cost. Private families would (and it is not yet too late) most probably have been induced to do the same, so that a sufficient quantity of sets might be obtained, and yet almost all the potatoes generally employed for seed be converted in this scarce time to the use of man; whereas had the act passed for granting the bounties proposed (*without an attention to this circumstance*), the great demand for seed potatoes, by raising their price, and also, by consequence, the price of wheat, would, I firmly believe, have converted the dearth we now experience into an *actual famine*.

There is one mode of increasing the quantity of cultivated land which does not seem to have struck the Committees, and that is by cultivating the strips of land by the road sides. The right of common is of little value, and their being commonable is often very injurious by trespasses

(frequently intentional) on the adjacent lands. If these strips were granted to cottagers, on condition that they scour, drain, and, with the assistance of the statute duty, keep in repair the ditches and roads contiguous to the strips they occupy (a failure in which should confiscate their title to the possession), it would be an advantageous bargain for themselves and for the public: for thus would even our bye roads become, as it were, bowling greens, and their borders (now useless or detrimental) the sources of plenty, for the dust or scrapings of the roads would prove an inexhaustible source of manure.

No quick fence should be admitted, but something of the nature of park paling, which would not by it's shade prevent the drying of the road.

Wherever the common became broad it would be necessary to erect a gate; and if a small cottage was erected by the parish at each gate (which could be done for a trifling expence), to be inhabited by some infirm pauper, for the purpose of opening and shutting it for and after passengers, so as to guard the property so granted from the depredations of cattle, it would be a great improvement.

The diminution of the consumption of any article is equivalent to the increase of it's production; I trust, therefore, it will not be deemed

irrelevant to mention, that for some months past I and many others have been in the habit of using a bread made with ten parts flour, one part ground rice, and six parts potatoes. This bread is in the opinion of most people *superior* to the best wheaten bread which *can* be *procured*, and the proportion of wheat flour saved has uniformly been about three sevenths.

I am, Sir, your most obedient servant,

R. PEW.

P. S. If by thus doubling the produce of potatoes on the land already in cultivation, which I am *certain* is practicable, we can produce sustenance for the whole population of the kingdom, which I *think* is probable, might it not be as well for the present to discourage rather than to encourage farther enclosures, that we may not unnecessarily anticipate the resources of posterity.

## DRAINING.

Great House, Leigb, near Worcester,

SIR,

June 1, 1801.

As a practical farmer, I feel confident that you will excuse the liberty I take in troubling you with the following observations, which I have made in the several counties of Hereford, Wor-

edster, Gloucester, and Salop. It appears to me from the situation of the lands, particularly in Herefordshire and Worcestershire, that a vast number of acres are useless for want of draining, and particularly so for want of draughts from the low lands into rivers, to draw the cold water off the surface quicker; and which low lands appear to me to be the best of land if properly attended to. If the practice of draining were enforced, with an act for a general enclosure, or a limited one under the judgment and direction of a committee of proper persons to be appointed and approved of by the magistrates in each district, I am confident they would have the happy effect of increasing employ for the labourer, relieve in a great degree parochial burthens, make more abundant the common necessities of life, and make the people satisfied by having them cheap. It would also lessen the necessity of importation and the expences of it, and keep in this kingdom vast sums of money which now go to enrich persons in foreign markets. Should these observations meet your judgment, and you should wish more particular information\* on the subject, I will most cheerfully meet your wishes.

I am, Sir, your most obedient servant,

JOHN HILL.

\* The communication will be acceptable. A.Y.



EXTRACT OF AN AGRICULTURAL  
AND STATISTICK JOURNEY

OF MR. BIRCHWOLD,

GENTLEMAN OF THE BEDCHAMBER TO THE KING  
OF DENMARK, BAILIFF OF SEVERAL BAILL-  
WICKS, AND OWNER OF GUDUMLUND, A CON-  
SIDERABLE ESTATE IN JUTLAND.

[*Translated from the German.*]

**AUGUST** 23, 1783, I went to Saltzau, which  
lies a mile from Preetz, and belongs to the Privy  
Counsellor Blome. This estate is in many re-  
spects a pattern of well-managed husbandry,  
where the agreeable stands in a proper com-  
bination with the useful.

The estate consists of three farms:

1. The manor farm Saltzau,
2. The farm Sophienhof,
3. The farm Selkau.

The arable is divided at Saltzau into fifteen  
enclosures, each of seventy acres\*, all enclosed  
with quick hedges, and occupied in the follow-  
ing order:

The division, which has lain to the ninth year

\* The German expression is barrel of land, *i. e.* what is  
supposed to require a barrel of corn to sow. A barrel is  
from two to three and four bushels, but the ploughers fixed it  
pretty fairly to an acre.

as pasture, is in the ninth year ploughed up in October and November, after having repaired the ditches and grips, to carry off the water from the low places, and to prevent wet spots.

First year. In the following summer, as soon as the barley sowing is over, this piece is ploughed and harrowed, then dunged, the dung ploughed in, and again harrowed; at length, about three weeks before Michaelmas, ploughed a third time, sowed with rye, and harrowed. Last of all the ditches in the fallow are secured, and water furrows drawn with the greatest care. This reckoning, from the order of sowing, we will call the first year.

Second year. In the following year, after the rye is harvested, it is once ploughed.

Third year. The year after it is ploughed, harrowed, and sowed with barley when the oak trees begin to shoot. This is ploughed in, harrowed three or four days after, and the clods are broken with mattocks, and the thistles spudded out with care. When the harvest is in it is ploughed, rye sowed, and harrowed.

Fourth year. When the rye is got in it is once ploughed.

Fifth year. This piece is ploughed again, oats sowed, ploughed in, and three or four days after harrowed.

Sixth year. In this year it is ploughed again, oats sowed, and harrowed. When the oats are

got in it lies to the ninth year for beast pasture. The meadows give 990 to 1000 loads of hay, at 990 to 1000 weight to the load.

The stock consists of 270 dairy cows; 50 three years old, 20 two years old, 50 yearlings, and 24 calves. The other calves and weaning two-year-old beasts are in the detached farms. The dairy is let to a Hollander, who gives yearly for each cow 11 rixdollars\* and 1 mark of Lubeck†. Of horses, about 60 head are kept.

*The arable fields of the farm Sophienhof* are divided into twenty-three divisions, each of about fifty acres. These are cultivated and sowed in the same manner as the fields at Saltzau, and consequently lie only seven years for pasture. 380 to 400 loads of hay are got, of the same size as before mentioned.

The dairy consists of 200 cows and 20 young cows; besides these are kept 20 horses. The dairy is farmed at the same rate as at Saltzau.

*The farm Selkau* has ten divisions, each of twenty-four acres, which are managed in the following order.—

When a division has lain six years in pasture for beasts it is planted in the autumn of the sixth year.

First year. In the following spring it is ploughed, harrowed, in the end of May ploughed

\* Rixdollar, 3s. 4d. † Mark of Lubeck, 14 or 15d.

again, buckwheat sowed, and harrowed. When the buckwheat is got in it is dunged, ploughed, rye sowed, and harrowed.

Second year. When the rye is harvested it is once ploughed.

Third year. In the following spring it is ploughed, harrowed, and oats are sowed. These are ploughed in and harrowed.

Fourth year. The last year they plough once, sow oats again, and harrow. The field then lies six years again for beast pasture.

N. B. It does not appear that any grass seeds are sowed.

About 180 loads of hay are got, each from 900 to 1000lb.

The dairy consists of 90 cows, which are let for 10 rixdollars and 1 mark of Lubeck. Four working horses are kept.

To perform the work on these farms, the possessor has,

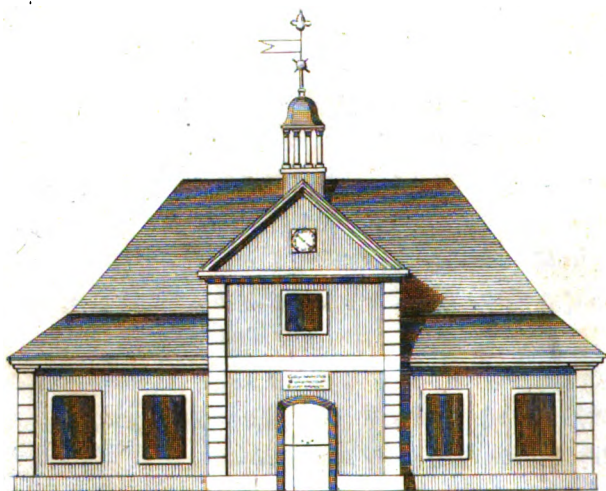
Besides the horses mentioned at each farm, (of which, however, at Saltzau, some belong to the stud and service of the lord) one bailiff and one clerk, which have to do with the whole. Besides this, at Saltzau, a field reeve, a barn reeve, three men servants, three cow herds, a swine herd, and three maids; at Sophienhof, one field reeve, one barn reeve, two labourers, and two cow herds; finally, at Selkau, a field reeve, barn reeve, two labourers, and a cow herd.

Twenty-two whole and fourteen half *buseners* (a species of villains).

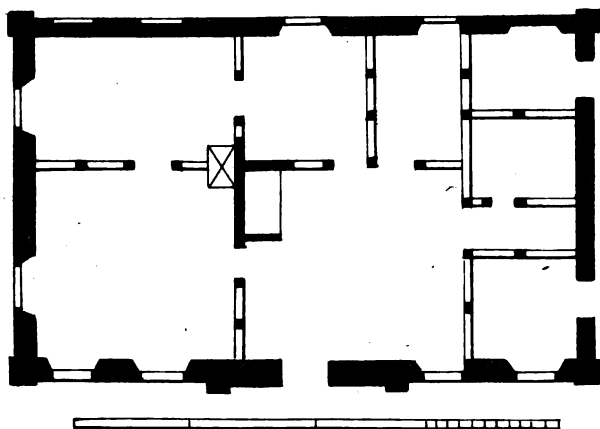
A whole *busener* has about sixty acres of arable, keeps fourteen to sixteen head of horned cattle, sixteen horses, also sheep, swine, geese, and so forth in proportion, two labourers, two maids, and two boys. He must send to the manor house every day in summer two men, a maiden, a stout boy, and a smaller boy or girl. In winter the little boy is not demanded, that he may go to school, for which excellent provisions are made. A half *husener* sends daily in winter and summer one man, one woman, and a boy. Thus each day in summer 152, and in winter 130 persons must work at the manor farm. As often as horses and waggons are wanted, a full *husener* sends two waggons, each with four horses; and a half *husener* one waggon also with four horses. Such a team carries of wheat, rye, barley, or buckwheat six barrels; of oats, eight; of butter, three; of cheese, sixteen *liespsund*\*; and of wood, half a *fasben*, three ells† high, and one and a quarter broad. If the place to which the load is to be carried is three miles off (fifteen English), it is allowed to the boor as a day's work; if five miles (twenty-

\* Answering to our stone, being in some places 14lb. in others 15 and 16.

† The ell two feet English.



*School House*



*North South 3/4 Strand*

For winter meat, one man besides is wanted for each acre of land.

Besides his feudal service, a whole husener pays in rent two rixdollars, one mark, and two shillings of Lubeck\*, four geese, and twenty eggs.

A half husener pays half as much.

The cottagers, of which there are some on the estate, and who have each a cow, do no weekly boons; but are bound, when the lord please, to work in summer for eight, (about six pence) and in winter for six Lubeck shillings; or to thrash by the barrel, for which they receive the seventeenth barrel: but the wives must work weekly two boon days; which in summer are reckoned at six hours, and in winter at five. The widows must do one day's work in the week.

The condition of the common people on this estate is extraordinarily good, and better than could be expected for villains. This is a consequence of the humanity and sensible management of the possessor. He takes care to give a sensible education to the children, and has in each village a school, with a clock, built from the ground with stone (See plate). The difficulty alone of preserving able schoolmasters,

\* About three halfpence.

for the securing of which a seminary has been founded at Kiel, hinders this point from being brought to perfection; but the landlord spares nothing to bring it about.

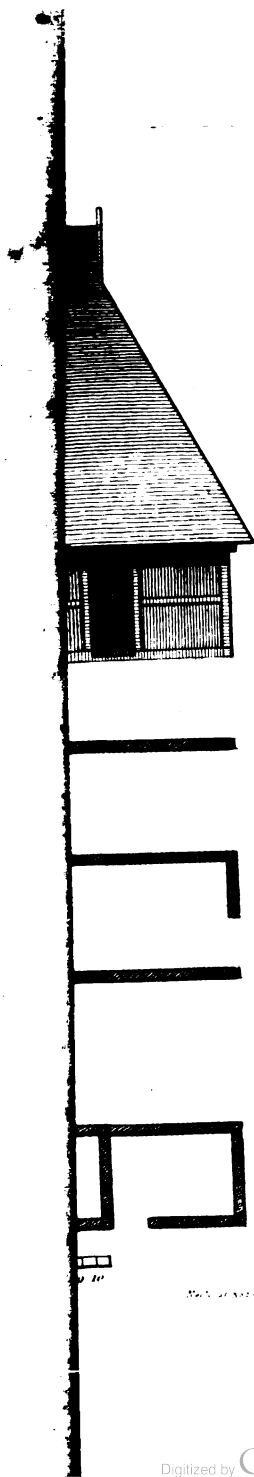
The lord takes more care than any where to provide a warm, wholesome, convenient, and roomy dwelling for his boors. He has every year two boors' houses built, as represented in the plate. In this house the rooms are sufficiently high; and do not, as in Jutland and Iceland, hinder the growth of men. On the great floor the thrashing is done, and the cattle feed on each side of the thrashing floor. The boor can in his room, nay even in his bed, overlook all his cattle and all his people. Every one sees the excellence of these houses; which I would long ago have imitated, if such a house did not cost at least 800 dollars; and if the high roofs, in places where many storms reign, as in most places in Jutland, did not require constant repair.

The boons or services are so settled that the boor is often back at home to dinner, and can work the rest of the day for himself.

The son, according to rule, always gets his father's task and business.

The landlord watches that the reeves and overseers shall not load the boors too much. From hence it comes that these boors are dili-





10



gent, cheerful, well clad, and many put out money at interest even with the lord himself. In their houses every thing appears as clean as in a baby house. Their gardens are full of good fruit trees. All this may be expressed in other words: the present landlord has made the villanage of his boors not to be remarked: but, alas! the evil is not prevented, that some time or other an ill-judging landlord, the guardian of a minor or the overseer of an absent lord, may make the condition of these good and diligent people like their former one, though they have not such temptation to this as in the royal Danish provinces in the like case, as the relative situation of the lord and boors is the same in Holstein as in Mecklenburgh, which I think I have already shown to be far preferable to that of Denmark.

*Fish Ponds.*—As considerable as the income of this estate is from husbandry, it has over and above great advantages from the fishery and woods. Among the fields lie eighteen large and five small fish ponds. In the little ones are carp, tench, pike, perch, &c.; and into those which can be let off the breeding carp are put in spring, and by the help of letting off the water the brood is taken up by hand and put into the greater ponds, which are all so contrived that the water can be drawn off clean.

In these ponds they remain two years, when they are sent in tubs to Hamburgh. A tub is about 140 lb. and, according to the size of the carp, sells for six to eight rixdollars (1l. to 1l. 6s. 8d.). Out of the largest of these ponds about 160 tubs; out of the second, 100; out of the third, 90; out of the fourth, 80; and out of the fifth, 60, may be sold. If the carp are to be made fat, in the first place the soil must be fat and loamy; second, some perch of moderate size must be put in with the young carp, to eat the brood of the carp and prevent their increase; third, when the pond have been two years filled with water, and the carp in it made fat, it must lie some years dry.

As there are five ponds at Saltzau, three lie dry every year, of which one is sowed with oats and two lie for meadow. Under these circumstances one may expect from every half acre of land which these ponds contain to get a tub of carp. In Sealand profitable fisheries of carp are established on several estates in this manner; the fisheries, particularly at Bregenton, are said to bring a considerable income. In Jutland this produce is inconsiderable, as there are no trading towns, and therefore the consumption fails.

Here are also ten fenced plantations of oak and one of fir, besides the aldercars which supply the wants of the manor and other farms, of which they reckon fifteen hundred, of the afore-

said dimensions. I saw likewise several plantations which had been made of several kinds of firs and pines by one another, in order to judge from their different progress which are the most advantageous for this district. In the gardens are plantations of American trees, part of which bear blossoms, and whose beauty, in my eyes, far surpasses the European ones.

Close by the manor house was formerly a great morass with bushes and little hills (ant hills and mole hills). This is now made dry by ditches, the bushes are grubbed up, and the hills cut up with a plough. This plough is made like a garden plough, only with this difference, that the iron to lighten the draught is not set horizontally, but, running from each side to a point like a boat, lies flat on the ground, and is forged like a hay cutter (See plate).

All the cattle, as well at the manor farm as at the boors' houses, have been inoculated with the distemper; and this must be reckoned amongst the improvements of the highest nature, as before they reckoned the loss on an average at 1000 rix-dollars per annum. This must also, probably, in ten or twelve years, when all the present cattle are dead, be taken up again, as the great beast markets, particularly in Hamburgh, often renew the distemper, so that the inoculation should be carried on with proper foresight.

The taxes which in Denmark are paid by the boors, or those who cultivate the gentlemen's estates, according to the barrels of hard corn, the owners pay in Holstein by ploughs; for each plough three rixdollars silver money are paid by the month. Saltzau stands at  $41\frac{1}{2}$  ploughs, and pays consequently yearly in king's taxes and dues 1494 rixdollars. The present possessor bought this estate about twenty years ago for 170,000 rixdollars. I conjecture from this they reckoned it brought in 6400 dollars, which make 4 per cent. on the purchase money. One may conclude from thence, that the king's taxes hold the proportion to the income of the proprietor of one to four and a half. In Denmark the proportion is as one to one, seldom as one to two, and I know no place where it is one to four; and yet Holstein complains of hard taxes as the remaining consequence of former heavy war times.

Though in all countries oppressive taxes are complained of, this complaint can only be considered as grounded with regard to the possessor in whose time a rise is made in the taxes; for to a buyer the proportion of the taxes to the whole income is indifferent, if they are only fixed and fairly given in to him. Then it is his business not to buy dearer than to allow him to receive at least the highest allowed interest of his capital laid out. As I believe one

may assume that agriculture has not yet reached it's perfection, but that in most places improvements may still be made, it may be more advantageous to lay out one's money on such lands where the proportion of the taxes to the owner's income is as one to one, than those where it is as one to two; since the size of the estate, and consequently the opportunity of making improvements, stand in the first case in proportion to the size and opportunity of making improvements in the last as three to two. If, therefore, the improvements in both cases could bring about a doubling of all the produce, the income of the proprietor would be in the first case raised fourfold, in the last only threefold. From hence then follows further that when other circumstances are alike, a wise cultivator would rather buy lands in Denmark, where the taxes are high, than in Holstein where they are low. This conclusion seems to receive new weight by the inferior state in which agriculture is in the Danish\* provinces to that in the German provinces. But the whole conclusion falls to the ground if the political regulations which were made in early times, and were grounded on the confined economical knowledge of those times, forbid the useful discoveries of later times being carried into effect; and if those institutions are

\* Both are under the crown of Denmark.

not regulated, altered, or abrogated, according to the growth of industry and knowledge, an economical law, which may have been in the year 1682 (in a country stripped of men, diligence, money, and trade by troubles within and without) the best and most advantageous law for the country, may in the year 1783. (in this country, where peace, which has lasted through a man's life, has made it possible to attain the most flourishing state) be one of the greatest hindrances to the improvement of the country.

---

*Extract from an Agricultural and Statistick Tour of Mr. Birchwold, Gentleman of the Bedchamber to the King of Denmark, published at Copenhagen, 1784.*

At Stechow, in Mecklenburg are 500 sheep, which belong not to the lord but to a shepherd, who pays yearly for the maintenance of each hundred sheep thirty-two rixdollars. For this is furnished him

1. Those fields which are too bad for the dairy cows, and the two-fallow fields.

2. For winter food, as much rye straw as the sheep can consume. This is laid in the racks round the fold, and the sheep eat only the ears, the rest serves for litter.

3. For each hundred sheep are allowed to the



shepherd four tons\* or barrels of rye, with fodder and grass for a cow.

Mecklenburg and Pomerania are full of such shepherd families, who have, without owning a foot breadth of land, several hundred to a thousand sheep, with which they move from one estate to another where they think they can better their condition. The sheep lie at night in a fold of hurdles made of hazel twigs; they are fastened to middling-sized stakes driven into the ground, and can easily be removed from one place to another by two men.

Each shepherd has a dog who keeps the sheep together, governs the whole flock at his master's wish, and guards the quick hedges and plantations. This dog does more service than three or four men, and is the principal cause that the young plantations, of which the country is full, are not destroyed, as often happens from the sheep in Denmark.

If one compare the advantages which a landowner in Denmark has from his sheep with those which one in Mecklenburg receives, it may appear perhaps that they are made most advantage of in Denmark, since, in general, they reckon a rixdollar income from each sheep: but when one considers, first, that the Mecklenburg sheep are much smaller than the Danish, so that, accord-

\* About two quarters.

ing to my ideas, they do not require in summer the third part of the grass that the others do, which appears from this, that they maintain themselves chiefly on fallows, where the frequent ploughing and harrowing allow little grass to come up; secondly, that the Mecklenburg sheep are foddered in winter with ryé straw only whilst the Danish want much hay; thirdly, that by diligent cropping of the weeds which shoot up on the fallows, they contribute much to the extirpation of them, which can scarce be done by labour alone; and, fourthly, that as they are shorn only once a year, about Midsummer, they can endure more in the winter than the Danish, which are shorn in the autumn at the entrance of the cold weather, and that consequently in spring and autumn they can better bear to lie at night in their moveable folds, by which about six acres of land are sufficiently dunged by 100 sheep to bear good rye; I believe that the bare income from the sheep is alike in both countries: but the advantages of the sheep in the whole farming system are greater in Mecklenburg than in Denmark, as in the summer the sheep consume only straw, keep the fallows clean, and dung a considerable quantity of land; in Denmark, on the other hand, they must lie in houses, and, to the prejudice of the cows and horses, must be fed with good grass in summer and hay in winter.



*Yule and the Old Man.*



AVERAGE PRICES OF CORN FOR  
MAY, 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	<i>Wheat.</i>	<i>Barley.</i>	<i>Oats.</i>	<i>Beans.</i>
	s. d.	s. d.	s. d.	s. d.
London,	14 11	6 9	4 3	6 3
Middlesex,	15 5	7 5	4 7	6 6
Surry,	16 7	7 6	4 7	7 2
Hertford,	13 11	6 11	4 9	8 7
Bedford,	14 9	8 7	4 3	7 6
Huntingdon,	15 0	8 11	3 11	6 3
Northampton,	13 2	8 5	3 11	6 10
Rutland,	13 7	8 11	4 8	8 6
Leicester,	14 7	9 4	4 6	9 0
Nottingham,	14 11	9 9	5 0	8 9
Derby,	16 4	9 1	5 1	9 9
Stafford,	17 6	10 11	6 2	10 5
Salop,	18 10	11 11	5 9	—
Hereford,	19 0	11 5	5 8	10 4
Worcester,	18 0	11 6	5 6	10 4
Warwick,	18 10	11 9	5 10	10 4
Wilts,	16 9	9 0	4 9	9 4
Bucks,	15 6	7 5	4 9	8 1
Oxford,	15 10	8 9	4 9	8 4
Berks,	14 6	8 7	4 11	7 6
Brecon,	19 10	13 9	5 2	—
Montgomery,	18 8	11 6	5 2	—
Radnor,	18 6	12 2	5 0	—

MARITIME COUNTIES.

Essex,	13 6	6 11	4 4	6 6
Kent,	14 1	5 10	3 11	6 3
Sussex,	15 4	7 0	4 5	—
Suffolk,	14 10	5 6	4 2	5 10
Cambridge,	13 8	6 9	3 0	5 8
Norfolk,	13 4	5 4	3 10	5 9
Lincoln,	13 1	8 0	3 7	7 9
York,	14 3	8 3	4 4	8 8
Durham,	16 5	9 9	5 1	—

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
Northumberland,	14	3	8	6	4	6	—	—
Cumberland,	16	10	10	7	6	10	—	—
Westmoreland,	17	3	11	2	6	2	—	—
Lancaster,	16	5	9	0	6	3	9	1
Chester,	14	11	—	—	5	6	8	7
Flint,	16	5	—	—	—	—	—	—
Denbigh,	18	2	13	8	5	9	12	2
Anglesea,	—	—	8	9	5	0	—	—
Carnarvon,	16	9	10	0	5	9	—	—
Merioneth,	17	10	12	3	6	3	—	—
Cardigan,	16	6	11	8	5	4	—	—
Pembroke,	16	3	11	1	3	11	—	—
Carmarthen,	17	10	14	0	4	3	—	—
Glamorgan,	18	8	11	6	5	9	—	—
Gloucester,	18	6	11	0	5	3	9	3
Somerset,	19	5	8	8	4	10	10	6
Monmouth,	20	8	12	9	—	—	—	—
Devon,	16	0	9	2	4	1	—	—
Cornwall,	14	8	9	0	3	11	—	—
Dorset,	17	8	10	3	5	1	9	8
Hants,	16	5	8	9	5	1	9	2
General average,	16	3	9	7	4	11	8	3
Feb.	17	8	10	5	5	7	10	1
March	19	3	11	0	5	9	10	0
April	18	11	11	0	5	8	9	6

---

## ANNALS OF AGRICULTURE.

---

### WOBURN SHEEP SHEARING, 1801.

**N**O person who entertains an adequate idea of the national importance of agricultural improvements can have any doubt of the beneficial effects flowing from the annual meeting at Woburn established by his Grace the Duke of Bedford. Whatever some persons may be inclined to think of exhibitions of cattle fattened to a very extraordinary degree, and tending to push that part of the graziers' business to the extreme, none can question the propriety of comparing different races of cattle and sheep in various particulars, exclusive of excessive fatness; none can doubt the utility of premiums for promoting a more correct tillage, for bringing into use new and improved implements of husbandry; none can hesitate in admitting the importance of that extensive communication of ideas and emulation of excellence which necessarily flow from bringing the

VOL. XXXVII. No. 211. O

farmers of the remotest parts of the kingdom into contact with each other, to examine practices to many unknown, and to listen to sentiments equally novel and interesting. The drillers of Norfolk describe their system to the adherents of broadcasting from Cornwall and Kerry, the enemies of paring and burning are enlightened by the practice of Kent and Cambridge, and every effort in tillage may be expected when the bets are in decision that shall decide the merit of the most important of all machines.

The sheep shearing this year was more numerously attended than on any former occasion.

IN THE ABBEY.

Duke of Manchester

Lord Thanet

Lord Somerville

Lord Ilchester

Lord Talbot

Lord Carington

Lord Preston

Lord J. Russell

Lord William Russell

Sir H. Fetherstone

Sir J. Reddell

Sir J. Throgmorton

Sir C. Willoughby

Sir G. Paul



Mr. Coke  
 Mr. Anson  
 Mr. Lee Antonie  
 Mr. Colhoun  
 Mr. Millington  
 Mr. Crowe  
 Mr. King  
 Mr. Rolfe  
 Mr. A. Young  
 Mr. Bettine  
 Mr. Newland  
 Mr. Macdowell  
 Mr. Holland  
 Mr. E. Fawkenner  
 Mr. Bing  
 Mr. Lorraine Smith  
 Mr. Cartwright  
 Mr. Gregory  
 Mr. Throgmorton Clifford  
 Mr. Garrard  
 Mr. Northey  
 Mr. Hoste  
 Rev. Mr. Hoste  
 Mr. Talbot  
 Mr. Fitzherbert  
 Mr. Child  
 Mr. Standley  
 Mr. Barnett  
 Mr. Palmer. ———— 43.

Monday	-	-	185	
Steward's room	-	-	70	
			<hr/>	255
Tuesday	-	-	187	
Steward's room	-	-	72	
			<hr/>	259
Wednesday	-	-	152	
Steward's room	-	-	80	
			<hr/>	232
Thursday	-	-	87	
Steward's room	-	-	45	
			<hr/>	132
Total	-	-	<hr/>	878
			<hr/>	

Of the company I shall insert some names, to shew that many counties had representatives at this greatest of agricultural meetings.

MONDAY, JUNE 15.

Lord Ashtown, <i>Woodlawn,</i> county <i>Galway, Ireland</i>	Mr. Boulton, <i>Tooley park,</i> <i>Leicester</i>
W. H. Apperly, <i>Withington,</i> <i>Hereford</i>	Mr. Bouverie, <i>Delapree ab-</i> <i>bey</i>
Mr. Aris, <i>Uffington, Salop</i>	Isaac Buxton, <i>Leicester</i>
S. Amhurst, <i>Farleigh, Kent</i>	H. Buckley, <i>Normanton hill,</i> <i>Loughborough</i>
Mr. Ashdown, <i>Ludlow, Sa-</i> <i>lopp</i>	Mr. Buller, <i>Maidwell</i>
Mr. Allen, <i>Clonard, Ireland</i>	W. Bushel, <i>Ash, East Kent</i>

T. Barker, *Ashford, Kent*  
 Sampson Barber, *Thorney, Cambridgeshire*  
 Mr. Boys, *Betsbanger, Kent*  
 Robt. Burgess, *Hucklestone, Leicestershire*  
 Mr. H. Budd, *Hayling island, Havant, Hants*  
 Sir G. Cornewall  
 Lieut. General Cuyler  
 Mr. Corry, *Chancellor of the Exchequer in Ireland*  
 Robt. Creswell, *Ravenstone, Leicestershire*  
 Mr. George Chaplin, *Tathwell, Lincolnshire*  
 Mr. Chaplin, *Blankney, Ditto*  
 Thomas Crook, *Ythberton, Wilts*  
 Mallet Case, *Testerton house, Norfolk*  
 Mr. W. Cheesman, *Yalding, Kent*  
 Mr. Colley, *Down Bishop's castle, Salop*  
 Richard Clark, *Upton on Severn, Worcestershire*  
 John Claridge, *Craig's court*  
 Lieut. Col. Dorrien, *Berkhamsted, Herts*  
 Robert Dexter, *Dexterville, Casbell, Ireland*  
 Lord Essex  
 Mr. Edwards, *Henlow, Beds*  
 Mr. Fellows, *Eggesford, Devon*  
 John Fitz Patrick, junior, *Urlingford, Freshford, Ireland*  
 Richard Fowkes, *Rothley, Leicestershire*

John Ferrett, *Redmarley, Worcestershire*  
 Francis Freene, *Hampton Bishop, Hereford*  
 George Gunning, Esq. *Rochester, Kent*  
 Mr. Gwilliam, *Parslow, Salop*  
 R. Gourlay, *Fifehire*  
 Mr. Grundy, *The Oaks, near Leicester*  
 H. Green, *Hunxton Hall, Cambridgeshire*  
 Valentine Green, *Normanton, Leicestershire*  
 Mr. Hillersdon, *Wimpole street, Cavendish square*  
 E. Hammer, *Stockgrove, Bucks*  
 Mr. W. H. Hammer, *Great Brickhill*  
 Mr. Wm. Hoste, *Barwick, Norfolk*  
 Mr. Hoste, *Godwick, Ditto*  
 Robt. Honeyborn, *Dishley, Leicestershire*  
 Sir Hugh Inglis, *Milton Bryant*  
 Baron Jacobi, *Prussian Ambassador*  
 Mons. De Janori, *No. 5, Titchfield street*  
 T. Joyce, *Freshford house, near Bath*  
 Mr. George Knight, *Chedham, Chichester, Sussex*  
 Mr. Long Kingsman, *Langley Bury, Herts*  
 Mr. Lagden, *Abington, Cambridgeshire*  
 E. Lott, *Honeywood farm, Portling, Kent*

- |  |  |
|--|--|
| Mr. Ludlow, <i>Slanshaw's court, near Bristol</i>            | Rev. Mr. Pointer, <i>Spoutho, Hunts</i>              |
| Thomas, <i>Lermitte, Colney hatch, Middlesex</i>             | Wm. Pelhy, <i>Ash, East Kent</i>                     |
| Mr. Lloyd, <i>Grove, near Ludlow, Salop</i>                  | Tho. Quikampton, <i>Hythe, Kent</i>                  |
| Richard Lloyd, <i>Urard Freshford, Ireland</i>               | Major Richards, <i>Brampton, Hunts</i>               |
| Sir John Macpherson  | Mr. Roper, <i>Potterspury, Stony Stratford</i>       |
| G. Mahon, <i>Westpart, Ireland</i>                           | Mr. J. Roper, <i>Harling, Norfolk</i>                |
| Ross Mahon, <i>Castlegar, Balinasloe, Ireland</i>            | Mr. Rowley, <i>St. Neot's, Hunts</i>                 |
| James Mahon, <i>Ditto</i>                                    | Mr. John Russell, <i>Maidstone, Ditto</i>            |
| John Mansel, <i>Esq. Cosgrove, Northampton</i>               | Mr. Ryves, <i>Rathcalla, county Wicklow, Ireland</i> |
| Michael Mitchell, <i>Hornsey, Middlesex</i>                  | P. Skipworth, <i>Aylesby Gaster, Lincolnshire</i>    |
| George Monk, <i>Appledore, Tenterden, Kent</i>               | T. Sayher, <i>Ludlow, Salop</i>                      |
| G. Moody, <i>Buckingham, near Gainsborough, Lincolnshire</i> | Mr. Stubbins, <i>Holmptierport</i>                   |
| C. Money, <i>Rainham, Norfolk</i>                            | S. Stone, <i>Knighton, Leicestershire</i>            |
| Charles Matson, <i>Wingham, East Kent</i>                    | Mr. J. P. Stone, <i>Quorndon, Ditto</i>              |
| William Martin, <i>Hunton, Kent</i>                          | Mr. Savery, <i>South Efford, near Modbury, Devon</i> |
| Mr. Mercer, <i>Green Trees, near Tunbridge, Ditto</i>        | Rev. G. Sherard, <i>Huntingdon</i>                   |
| Mr. Newman, <i>Nelmes, Essex</i>                             | Mons. De Soucy, <i>Titchfield street</i>             |
| Lord Ongley  | Mr. Smith, <i>Thrapston</i>                          |
| Sir George Osborn  | James Scully, <i>Kilfiacle, Cashel, Ireland</i>      |
| Mr. Palmer, <i>Brampton, Hunts</i>                           | Roger Scully, <i>Silverfort, Cashel, Ditto</i>       |
| Rev. E. Perkins, <i>Huntingdon</i>                           | Mr. Manners Sutton, <i>Digs-well house, Herts</i>    |
| S. Plaskett, <i>Weston house, Oxfordshire</i>                | Sir John Throgmorton                                 |
|  | William Thornton, <i>Mogerhanger house</i>           |

Mr. Tench, *Bromfield bouse, Ludlow, Salop*  
 Godfrey Thornton  
 Mr. Tomalin, *Loughbro', Leicestershire*  
 Mr. Trevor, *Fitwick*  
 Geo. Tollet, *Twynning, Gloucestershire*  
 Doctor Vyner, *Eatborpe, Soulham, Warwickshire*  
 T. Westcar, *Willason, Oxon*

H. Vassall, *Winterbourn court, Bristol*  
 Mr. Walton, *Ibstock, Leicestershire*  
 Thomas Wilshire, *Hitchin*  
 J. Woods, *Cbil grove, Sussex*  
 James Wall, *Asbford, Kent*  
 Mr. Thomas Whittle, *East Farleigh, Kent*  
 Rev. Arthur Young, *Bradfield, Suffolk*

## TUESDAY, JUNE 16.

Lord Althorp  
 George Aikin, *Elstow*  
 Rev. Mr. Ashfield, *Slapton, Bucks*  
 John Ambrose, *Copford, near Colchester, Essex*  
 Mr. T. Bowes, —, *Herts*  
 R. Banton, *Whiston, Salop*  
 G. Byng, Esq. *Wrotbam park, Middlesex*  
 S. Bennett, *Temsford, Beds*  
 R. Burgess, *Hucklescote, Leic.*  
 Mr. H. Budd, *Hayling island, Hants*  
 Mr. Boys, *Belsbanger, Kent*  
 John Cheese, *Lyonsball, Herefordshire*  
 Rev. Mr. Cotton, *Thornby, Northamptonshire*  
 W. Chapman, butcher, *Fleet market, London*  
 W. Collier, *Thorney, Cambridgeshire*  
 Mr. Charge, *Newton Richmond, Yorksbire*  
 Mr. J. Cotton, *Highbstreet farm, near Hemel Hempstead*  
 Richard Dansey, *Little Hereford, Herefordshire*

Joseph Dent, *Northampton*  
 T. Dewing, *Castleacre, Norfolk*  
 Mr. Denton, *Brandon*  
 John Ellman, *Glynd, Sussex*  
 John Edmonds, *Whatford, Gloucestershire*  
 R. Fuller, *Roaking Dorking, Surrey*  
 J. Giblett, *Heartford bridge, Hants*  
 James George, near *Hereford*  
 P. Giblett, *Bond street, London*  
 T. Grace, *Puttlowes, Bucks*  
 Edw. Green, *Woulton, Staffordsbire*  
 Wm. Gwillim, *Woolthorpe, near Ledbury, Herefordsb.*  
 B. Higgins, *Weston, Bucks*  
 Mr. Howell, *Markgate street*  
 Sir G. F. Hill, *Londonderry, Ireland*  
 W. Hall, *Bebury, Gloucestershire*  
 Thomas Hedges, *Cublington, Bucks*  
 John Higgins, *Turvey bouse*  
 W. Hayward, *Sudbury, Suffolk*

- |   |   |
|---|---|
| John Johnson, <i>Kempston, Norfolk</i>                          | Rev. Mr. Smythies, <i>Alperton, Suffolk</i>                       |
| Rev. T. Jones, <i>Dinton, near Aylesbury</i>                    | Mr. S. Smith, <i>Coppice green, Salop</i>                         |
| Mr. Kent, <i>Howton Roberts, Yorkshire</i>                      | Mr. W. Smith, <i>Woodhouse, Ditto</i>                             |
| Wm. Linger, <i>Bircbill lodge, Herefordshire</i>                | Joseph Speciall, <i>Bishop Stortford, Herts</i>                   |
| John Hanson Ladds, <i>Steeple Gidding, Hunts.</i>               | Thomas Sayle, <i>Wintbridge, Yorkshire</i>                        |
| T. Longland, <i>Bugden, Hants</i>                               | W. Spong, <i>Staplehurst, Kent</i>                                |
| Joseph Marshall, <i>Eln Wisbech, Cambridgeshire</i>             | Rev. G. Sherard, <i>Huntingdon</i>                                |
| Gilt Maltby, <i>Hoveringham, Notts</i>                          | Capt. Sismey, <i>Offord, Hunts</i>                                |
| Mr. Thomas Murton, <i>Sittingbourn, Kent</i>                    | Wm. Smith, <i>Mitford, near Bath</i>                              |
| T. Morley, <i>Lit. Marcle, near Ledbury, Herefordshire</i>      | William Tully, <i>Huntington, Herefordshire</i>                   |
| H. J. Nickolls, <i>Woodhouse, near Wisbech, isle of Ely</i>     | John Terrett, <i>Redmarley, Worcestershire</i>                    |
| John Nickolls, <i>Stukely lodge, Hants</i>                      | J. Turner, <i>Turner ball, Holderness, Yorkshire</i>              |
| Richard Pooley, <i>Ramsey</i>                                   | Doctor Vyner, <i>Eatborpe Southam, Warwickshire</i>               |
| Mr. Perkins, <i>Huntingdon</i>                                  | J. Westcar, <i>Creslow, Bucks</i>                                 |
| E. S. Pestell, <i>Asbby de la Zouch</i>                         | James Wall, <i>Asbford, Kent</i>                                  |
| Mr. Page, <i>Ely</i>  | T. Walford, <i>Ruyton lodge, Salop</i>                            |
| Mr. John Russell, <i>Maidstone, Kent</i>                        | John Wood, <i>Wheston, Ditto</i>                                  |
| Mr. Rowling, <i>St. Neot's, Hunts</i>                           | Wm. Walker, <i>Woolsthorpe, near Belvoir castle, Lincolnshire</i> |
| Mr. J. Robinson, <i>Wellingborough Grange, Northamptonshire</i> | W. Wyborn, <i>Smeeth, Kent</i>                                    |
| Lord Spencer  | Mr. J. White, <i>East Farleigh, Ditto</i>                         |
| Sir John Sebright, <i>Beechwood</i>                             | Edward Wakefield, <i>Burnham wyck, Essex</i>                      |
| Ambrose Spong, <i>Rochester</i>                                 | J. Woods, <i>Chil grove, Sussex</i>                               |
|   | W. Yarworth, <i>near Abergavenny, Monmouthshire</i>               |

## WEDNESDAY, JUNE 17.

Wm. Andrews, *Olney, Bucks*  
 J. Atterbury, *Newfarm, Hockliffe*  
 Wm. Breedon, *Ruddington, near Nottingham*  
 T. Barker, *Asbford, Kent*  
 Sir T. Carr, *Lewes, Sussex*  
 Mr. J. Chase, *Luton, Beds*  
 John Cooper, *Leighton*  
 R. Earl, *Dallington, Northamptonshire*  
 Jam. Fossey, *Houghton Regis*  
 Mr. John Fletcher, *Rusbden, Northamptonshire*  
 Mr. Gibbon, — *Salop*  
 T. Grace, *Risborough, Bucks*  
 Major Hardy, *Westmead, Carmarthenshire*  
 S. Hopkinson, *Morton, near Bourn, Lincolnshire*  
 J. Hamshar, *Patcham, Sussex*  
 B. Higgins, *Weston, Bucks*  
 Mr. C. Hillyard, *Northampton*  
 John Johnston, *Kempston, Norfolk*  
 Jos. Jarvis, jun. *Atherstone, Warwickshire*  
 J. King, *Wycombe, Bucks*  
 J. Kingsley, *Pirton, Herts*

Tho. Kitelee, *Castle Thorpe, Bucks*  
 Rev. F. Montgomery, *Milton, near Northampton*  
 Mr. Mills, *Barford, Warwickshire*  
 Mr. Murphy, *Silsoe*  
 Mr. Nourse, *Colney, Herts*  
 Rev. H. Portington, *Billing Parva, Northampton*  
 Pitcher Ralfe, *New Romney, Kent*  
 Mr. O'Reilly, *Kildongan castle, county Kildare*  
 William Scrase, *Patcham, Sussex*  
 Mr. Sandys, *Southam, Warwickshire*  
 Mr. Saffery, *Downham, Norfolk*  
 Rev. Mr. Symes, *Bally Arthur, county Wicklow, Ireland*  
 W. Viath, *Twywell, near Thrapstone, Northamptonshire*  
 George Watson, *Rugeley, Staffordshire*  
 Mr. Wingfield, *Tickencote, Rutland*

## THURSDAY, JUNE 18.

Sir M. Cromie  
 Mr. Davis, *Bloxam, Oxon*  
 Tho. Fisher, *Lindley, Leicestershire*  
 General Harcourt, *St. Leonard's, near Windsor*  
 Joseph Jarvis, jun. *Atherstone, Warwickshire*  
 William Knowles

J. Kingsley, *Pirton, Herts*  
 Tho. Lavander, *Biddenham, Beds*  
 Wm. Leister, *Northampton*  
 Colonel Sutton, *Digswell*  
 Rev. Mr. Wodley, *Swanbourne, Bucks*  
 Tho. Watson, *Wauldby, by South Cave, Yorkshire*

The Duke did more business at this sheep shearing than at any former one, as appears from the following account.

*Leicestershire Tups let on Tuesday, June 16.*

No.		£.	s.	d.
3	Lord Thanet, <i>Kent</i>	-	42	0 0
4	Lord Preston, <i>Beds</i>	-	73	10 0
7	—— Standley, Esq. <i>Hunts</i>	-	63	0 0
8	Lord Talbot, <i>Staffordshire</i>	-	52	10 0
11	S. Whitbread, Esq. <i>Beds</i> , 2-shrs.	-	52	10 0
12	—— Spung, Esq. <i>Hants</i>	-	31	10 0
13	Henry Budd, Esq. <i>Ditto</i>	-	52	10 0
14	Rev. Mr. Andsley, <i>Northampsh.</i> 3-shrs.	-	31	10 0
15	Mr. Johnson, <i>Norfolk</i>	-	84	0 0
17	John Butfield, <i>Potsgrove</i>	-	42	0 0

*Lot South-Down Ewes sold on Wednesday Morning.*

1	Mr. Money Hill	20 ewes at 43s. per hd.	43	0 0
2	Ditto	20 at 42s.	42	0 0
3	Ditto	20 at 65s.	65	0 0
4	Mr. Kingsley	20 at 38s.	38	0 0
5	Sir J. Throgmorton	20 at 43s.	43	0 0
6	Mr. Johnson	20 at 50s.	50	0 0
7	W. Northey, Esq.	20 at 48s.	48	0 0
8	Mr. Money Hill	20 at 61s.	61	0 0
9	Mr. Kingsley	20 at 44s.	44	0 0

*No. South-Down Tups let on Wednesday Evening.*

2	Sir John Sebright, <i>Herts</i>	-	10	10 0
4	W. Anson, Esq. <i>Staffordshire</i>	-	42	0 0
5	Mr. Runciman, <i>Beds</i>	-	21	0 0
7	Ditto <i>Ditto</i>	-	21	0 0
8	Sir John Throgmorton	-	36	15 0
9	William Northey, Esq. <i>Wilts</i>	-	42	0 0



*Leicestershire Tups let on Thursday Morning.*

No.			£.	s.	d.
1	Mr. Luck, <i>Beds</i>	-	-	10	0
3	John Higgins, Esq. <i>Ditto</i>	-	-	10	0
6	Mr. Kingsley, <i>Hants</i>	-	-	10	0
7	Mr. Negus, <i>Beds</i>	-	-	26	5
8	Mr. Barker, <i>Kent</i>	-	-	31	10
11	Mr. Greasham, <i>Beds</i>	-	-	15	15
12	Mr. Jennings, <i>Ditto</i>	-	-	26	5
14	Mr. Purser, <i>Ditto</i>	-	-	15	15
15	Mr. Davis, <i>Northamptonshire</i>	-	-	15	15
17	His Grace the Duke of Manchester, <i>Hunts</i>	26	5	0	

*Leicestershire Ewes sold on Thursday Morning.*

Lot					
1	Mr. Kingsley	-	5 at	-	8 8 0
2	Ditto	-	5 at	-	10 10 0
3	Lord John Russel	5 at	-	-	13 13 0
4	Mr. Purser	-	5 at	-	21 0 0

*Herefordshire Heifers and Cows sold on Thursday Evening.*

No.					
1	Lord Preston	-	a year-old	-	14 3 6
2	Hugh Hoare, Esq.	a 2-year-old	-	-	15 15 0
3	Ditto	-	ditto	-	14 14 0
4	Mr. Ridgway	-	a cow	-	21 0 0
5	Ditto	-	ditto	-	28 17 6

*Devonshire Heifers, &c. sold on Thursday Evening.*

1	Sir Hugh Inglis	an Alderney cow	-	14 14 0
2	Hugh Hoare, Esq.	ditto	-	14 14 0

No.				£.	s.	d.
3	Mr. Bithrey	a Devon heifer		- 16	16	0
4	Mr. Hewin	- ditto	-	- 16	16	0
5	Ditto	- ditto	-	- 21	0	0
6	Lord Preston	- ditto	-	- 15	15	0
7	T. W. Coke, Esq.	ditto	-	- 16	16	0
8	Ditto	- ditto	-	- 21	0	0
9	Lord Preston	- ditto	-	- 13	2	6
10	Mr. Westcar	- ditto	-	- 17	17	0
11	T. W. Coke, Esq.	ditto	-	- 14	3	6
12	Hugh Hoare, Esq.	ditto	-	- 14	3	6
	T. W. Coke, Esq.	a Devon bull		- 21	0	0
				<hr/>		
				1687	3	6
				<hr/>		

In these four days, therefore, these breeds of sheep and cattle have been spread into the counties of Kent, Hunts, Stafford, Hants, Northampton, Norfolk, Herts, Wilts, and Bucks: this must be esteemed a national benefit. Whatever may be the comparative merit of these and other breeds, it is certainly an object of importance to have them scattered about the kingdom in the hands of men who will, in all probability, give them that fair trial which shall ascertain their worth, and establish the race, if found better than the breeds of the country.

*Premiums for encouraging the Introduction of the Leicester and South-Down Breed of Sheep into Bedfordshire.*

- I. To the person in Bedfordshire who shall, between June and Christmas 1800, expend the largest sum of money (not less than sixty guineas) in the purchase of breeding ewes or theaves of the New Leicester or South-Down breed—a premium of *fifty guineas*.

Certificates of the sum expended, both from the receiver and the payer, the stock purchased, respecting place, breeder, and time of delivery in Bedfordshire, to be sent, sealed up, to the Duke of Bedford on or before Christmas day 1800 (but not to be opened till the day the sheep shearing commences), with the names of the claimants and the place of their residence written on the outside. The Duke to have liberty to send as often as he please to have the stock viewed between Christmas and the time of adjudging the premium.

- II. A premium of *twenty guineas* will be given to the person who expend the next largest sum in the same object, and on the same conditions.

*Note.*—No person who have received either of the above premiums on any former occasion will be admitted a claimant.

*Committee.*

LORD JOHN RUSSEL

SIR C. WILLOUGHBY, BART.

ARTHUR YOUNG, ESQ.

Opened the letters of the claimants for the premiums.

It appears by the certificates of Mr. John Butfield and Mr. John Johnson, that Mr. Richard Gresham bought sheep as described in the advertisement to the amount of 84l. and 68l. 5s.; together, 152l. 5s.

It appears by the certificates of Mr. Francis Morland, Mr. Thomas Smith, and Mr. Richard Knight, that Mr. John Bithrey bought sheep as described to the amount of

-	23	2	0
	129	3	0
	32	0	0

---

£. 184 5 0

Mr. Bithrey's own certificate also.

It appears by the certificates of Mr. John Duckitt and Mr. A. W. Hodson, that Mr. W. Runciman bought sheep as described to the amount of

-	120	0	0
	70	0	0

---

Mr. Runciman's own certificate £. 190 0 0  
also.

---

And that pursuant to the conditions required, he put them to tups in 1800, and intends the same in 1801.

It appears by the certificates of Mr. John Johnson, Mr. R. Earle, and Mr. J. Tenny, that Mr. J. P. Cowley bought sheep as described to the amount of

-	-	-	49	10	0
			57	0	0
			21	0	0
			84	0	0

---

£. 211 10 0

---

And it appears that he hired rams of the same breed. His own certificate also.

*Decision.*

It therefore appears to us that Mr. Cowley is entitled to the first premium, and that Mr. Runciman is entitled to the second premium; and that Mr. Bithrey and Mr. Gresham are entitled to the use of tups gratis, having expended more than the sum required.

JOHN RUSSELL

C. WILLOUGHBY

A. YOUNG.

*Premiums for Fat Wethers.*

- I. To the person who shall breed, and produce at Woburn sheep shearing, June 1801, the best two-shear fat wether—the premium of a cup, value ten guineas.
- II. To the person who shall breed in Bedfordshire, and produce at Woburn sheep shearing 1801, the best two-shear fat wether, five guineas.—The same person not to have both premiums. The name of the breeder, together with the place where bred, to be duly certified, and given in at the time of shearing.

The wethers to be produced on Tuesday, between the hours of ten and eleven, at Woburn Abbey: they will be sheared, weighed alive, killed, and weighed dead, and due attention paid to wool, carcass, and tallow.

*Committee.*

LORD SOMERVILLE

MR. J. BENNET

MR. T. CROOK.

*Decision.*

The four prize wethers died well, and have done great credit to the breeders. The judges, taking into consideration the injury which results to the public from the practice of fattening ani-

imals on corn, are compelled to withhold the first prize from Mr. Moore; and to give it to Mr. Bithrey. The second, or Bedfordshire prize is adjudged to Mr. Moore, carcass and wool considered.

SOMERVILLE

J. BENNET

T. CROOK.

Mr. Moore and Mr. Butfield, corn; Mr. Bithrey and Mr. Cowley, no corn.

*Mr. Bithrey's Two-year-old Wether.*

			lb.	oz.
Weight alive after shearing	-	-	183	0
Carcass	-	-	105	8
Wool	-	-	7	12
20 alive give 12 dead.				

*Mr. Cowley's.*

Weight alive after shearing	-	-	153	8
Carcass	-	-	100	8
Wool	-	-	5	12
20 alive give 13½ dead.				

*Mr. Butfield's.*

Weight alive after shearing	-	-	172	8
Carcass	-	-	112	0
Wool	-	-	4	2
20 alive give 13½ dead.				

VOL. XXXVII. No. 211. P

Mr. Mobbe's      lb. oz.  
 Weight alive after shearing      157 6  
 Carcass      109 8  
 Wool      6 12  
 26 alive give 14 dead.

### Wool.

	lb. oz.	at	d.	s.	d.
Butfield	4 2	at 14	-	4	9 $\frac{3}{4}$
Moore	6 12	at 11	-	6	2 $\frac{1}{2}$
Bithrey	7 12	at 10 $\frac{1}{2}$	-	6	9 $\frac{1}{4}$
Cowley	5 12	at 9	-	4	3 $\frac{3}{4}$

### Premiums for Theaves bred in Bedfordshire.

- I. To the person who shall breed in Bedfordshire and produce at Woburn sheep shearing 1801 the best theave—a cup, value ten guineas.
- II. To the person who shall breed in Bedfordshire and produce at Woburn sheep shearing 1801 the second best theave—a cup, value five guineas.—The same person not to have both premiums.

The sheep to be produced on Tuesday, between the hours of ten and eleven. The claimants to produce certificates that their theaves were bred in Bedfordshire, specifying the parish, and name of the breeder.



Woburn Abbey, June 17, 1801.

## Committee.

T. W. COKE, ESQ.  
MR. STUBBS, OF NOTTS.  
MR. SELWORTH, OF LINCOLNSHIRE.

Mr. Butfield, Mr. Moore, Mr. Platt, Mr. Cole, and Mr. Bithroy shewed for the premiums.

Adjudged the first premium to Mr. Butfield and the second to Mr. Moore.

*Premium for encouraging Improvement in the  
Plants of Agriculture.*

To the person who shall produce at Woburn sheep shearing who either the best and most useful, newly-invented implement, the sum of twenty guineas.

As it is the intention, in giving this premium, both to encourage and to introduce to general notice such improvements in implements of agriculture as appear of real utility, it will be left to a committee to decide, 1st, Which implement produced is the preferable; 2dly, Whether any of them merit the reputation that the acquisition of a premium might confer. The implements are to be brought to the park farm.

Woburn Abbey, June 18, 1801:

*Committee*

LORD SOMERVILLE

THOMAS CORE, ESQ.

MR. JOHNSON, OF NORFOLK

*Decision*

Mr. Lester's improved cultivator, being a heavy, four-horse power, entitled to no premium.

Mr. Greave's scuffler, three-horse power, not entitled to any premium.

Mr. Gooch's two-horse plough at length, not entitled to any premium.

There being one premium only, it is adjudged to Mr. Salmon, for his new-invented turnip drill, remarkable for the straightness of its work.

Mr. Lester, of Northampton, exhibited a chaff cutter, worked by two men and fed by a third, which cut eight bushels in nine minutes and a half. A patent machine.

ROBERT SALMON, WOBURN, BEDFORDSHIRE,

undertakes to make his improved drilling and sowing machines of different descriptions as under:

Machine principally applicable for turnips or small seeds, at nine inches asunder, or less if required, the feeders being capable of containing three quarters of a pint each - 9 9

The same machine with the shares made to shift to different distances - 11 11

The same machine with reservoirs to supply the feeders, applicable for sowing most kinds of grain, the reservoirs containing not less than one quarter of a peck for each drill - 13 13

### *Exhibitions.*

Mr. Wakefield\*, of Burnham, in Essex, exhibited a Suffolk stallion, of the sorrel punch breed, which was much admired.

\* This gentleman is a very noted cultivator. That he conducts his business with no inconsiderable spirit may be conjectured from his having dibbled, in 1800, 348 acres of wheat, all on clover lay or bean stubbles, at 10s. 6d. an acre, one row on a flag, for hand hoeing, which cost him to 30s. an acre: quantity of seed two to five pecks an acre. It is not difficult to foretel that he will, as he advance in this practice, increase his seed considerably.

Mr. Inskip, of Old Warden, near Biggleswade, shewed a fat pig, half of the Suffolk and half of the Chinese breed, which rendered manifest to every eye the great improvement effected in swine.

Mr. Moore, of Bedfordshire, shewed a sow of the Suffolk breed, of a form much approved.

Mr. Chaplin, of Tathwell, in Lincolnshire, exhibited some Lincoln rams, the fleeces of which were much admired: one, a two-shear, weighed 17 lb.; a three-shear, 15 lb.; a five-shear, 12½ lb.; and of a seven-shear ewe, 10 lb. Also a fat ewe, of which the following is an account:

	lb.	oz.
Weight alive, after 24 hours fasting	181	0
Wool	12	8
Blood	6	8
Entrails	12	8
Pluck and head	10	14
Skin	17	4
Fat	15	0
Carcass	118	0
	179	8

20 alive give 13 dead.

20 ——— 14½ fat included.

# AGRICULTURE.

215

The Duke of Bedford killed the following South-Down ewe:

Weight alive, after 26 hours fasting - 140 0

Skin	-	-	-	8	8
Head and pluck	-	-	-	8	8
Blood	-	-	-	5	0
Entrails	-	-	-	8	8
Fat	-	-	-	13	8

				44	0
Net carcass	-	-	-	93	8
				137	8

Lost - - - 2 8

20 alive give 13 $\frac{1}{3}$  dead.

20 - - - 15 fat included.

Mr. Edward Smith, of Clothallbury, near Baldoc, exhibited a comparative lot of Hertford (*Wiltsbires*) and of South-Down sheep which had gone together, and the superiority of the latter was striking. One was killed, shorn once, and not fed with any particular attention.

Weight alive - - - - 151 0

Skin	-	-	-	12	0
Head	-	-	-	10	8
Blood	-	-	-	6	8
Entrails	-	-	-	14	0
Fat	-	-	-	15	8
Carcass	-	-	-	92	0

20 alive give 12 $\frac{1}{2}$  dead.

20 - - - 14 $\frac{1}{3}$  fat included.

The Hertfordshire not fat enough to kill.

Mr. Bithrey, of Snelsham, Bedfordshire, gave in an account of a three-shear sheep by the Woburn A, out of an Ibstock ewe, grass fed, slaughtered December 20, 1800:

	lb.
Weight alive	272
Carcass	186
Skin	23
Blood	9
Head and pluck	13
Kele	17
Rough fat	7
Entrails	15

	270
Loss (suppose)	2
	272

20 alive give  $13\frac{1}{2}$  dead.

20 ———  $14\frac{1}{2}$  fat included.

Mr. John Ellman, of Glynd, Sussex, handed about an account of his flock at the last lambing:

Oct. 17th, 1800, put rams to 607 ewes.

Lost in the winter	2
Lost in lambing	6
Cast her lamb	1
Barren	21
Produced lambs	577

607

Lambs living in June 1801, 744.

## AGRICULTURE.

217

The conversation this meeting, as in all the former, was entirely agricultural; the breeds of cattle and sheep were discussed; and I was glad to find that the plough caused no inconsiderable share of debate, and gave rise to the following

### BETS.

*Woburn, June 17, 1801.*

Mr. Coke proposes, that at the next Woburn sheep shearing there shall be a trial of ploughs; and he challenges all England, with a Norfolk plough and a pair of horses, to plough an acre, or half an acre, of any soil for fifty guineas; regard being had to the depth and cleanness of the furrow.—Four horses allowed for a double-furrow plough.

T. W. COKE.

Accepted. EDWARD WAKEFIELD,  
*of Burnham, Essex.*

No friend to the double-furrow plough stood forth.

Sir John Sebright offers to bet 50 guineas, that Mr. Coke will not plough an acre of land in one day, in a husbandlike manner, with the wheel plough commonly used in Norfolk, with two horses; an acre of which Sir J. Sebright will plough in the same time with a Hertfordshire plough and four horses: the land to be fixed upon by Sir J. Sebright, near Beechwood, in Herts, in the month of October. One person

to be named by each of them, and they calling in a third if they do not agree. J. SEBRIGHT.

Accepted. T. W. COKE.

Relative to sheep also the following took place:

Mr. Bithrey bets Mr. Moore fifty guineas, that he show this time twelvemonth a better two-shear wether at Woburn Abbey than Mr. Moore.

WM. BITHREY.

Accepted. J. MOORE.

Mr. Ed. Cowley bets twenty guineas, that Mr. Bithrey produce at next Woburn sheep shearing a better two-shear fat wether, of his own breed, than Mr. Moore.

ED. COWLEY.

Accepted. J. MOORE.

Mr. Joseph Cowley bets twenty guineas on the same, against Mr. Moore.

J. P. COWLEY.

Accepted. J. MOORE.

#### Offer by Sir Thomas Carr.

Sir Thomas Carr, of Sussex, will show, in June 1802, 100 bullocks and 150 acres of wheat for any sum not exceeding 100 guineas. The gentleman who accept the challenge to possess the bullocks at this time.

Not accepted by any one.



Mr. Ellman remarked on it, that the person who had the oxen might not have the wheat; he therefore recommended Sir Thomas to offer showing 20 oxen; and as he had above 100, he would have the advantage of many to choose from, and the offer might then be accepted: but this was not Sir Thomas's object; he declined it.

---

The Duke announced the following premiums for the year ensuing:

*Premiums for encouraging the Introduction of the Leicester and South-Down Breed of Sheep into Bedfordshire.*

- I. To the person in Bedfordshire who shall, between June and Christmas 1801, expend the largest sum of money (not less than sixty guineas) in the purchase of breeding ewes or theaves of the New Leicester or South-Down breed, and put them to a tup of the same sort in the years 1801 and 1802—a premium of *fifty guineas*.

Certificates of the sum expended, both from the receiver and payer, the stock purchased, respecting place, breeder, and time of delivery in Bedfordshire, to be sent, sealed up, to the Duke of Bedford on or

before Christmas Day 1801 (but not to be opened till the day the sheep shearing commences), with the names of the claimants and the places of their residence written on the outsides. The Duke to have liberty to send as often as he please to have the stock viewed between Christmas and the time of adjudging the premium.

*Note.*—No person who have received the above premium on a former occasion will be admitted a claimant.

- II. All other claimants of the preceding premium who appear to have expended a sum not less than sixty guineas shall have the use of a ram in the year 1802 of the same breed as the ewes purchased gratis.

*Note.*—As the intention of this premium is to induce the farmers of Bedfordshire to improve their flocks, the different claims will be submitted to a committee, and it will be left entirely to them to decide.

### *Premiums for Fat Wethers.*

- I. To the person who shall breed and produce at Woburn sheep shearing, June 1802, the best two-shear fat wether—the premium of a *cup, value ten guineas.*
- II. To the person who shall breed in Bedfordshire and produce at Woburn sheep shearing 1802 the best two-shear fat wether, *five guineas.*—The same person not to have both pre-

miums. The name of the breeder, together with the place where bred, to be duly certified and given in at the time of shearing.

The wethers to be produced on Tuesday, between the hours of ten and eleven, at Woburn Abbey. They will be sheared, weighed alive, killed, and weighed dead, and due attention paid to wool, carcass, and tallow.

## *Premiums for Theaves bred in Bedfordshire.*

- I. To the person who shall breed in Bedfordshire and produce at Woburn sheep shearing 1802 the best theave—a cup, value ten guineas.
- II. To the person who shall breed in Bedfordshire and produce at Woburn sheep shearing 1802 the second-best theave—a cup, value five guineas. The same person not to have both premiums.

The sheep to be produced at the park farm on Tuesday, between the hours of ten and eleven. The claimants to produce certificates that their theaves were bred in Bedfordshire, specifying the parish and name of the breeder.

## *Sundry Premiums.*

- I. To the person who shall produce at Woburn sheep shearing 1802 the best boar—five guineas.

II. To the best sheep shearer—*five guineas.*

Second best—*four ditto.*

Third best—*three ditto.*

Fourth best—*two ditto.*

Fifth best—*one ditto.*

If more than ten candidates, to draw lots. The trial to be made on the Thursday. Candidates to give notice on the Saturday before the clipping.

*Premiums for encouraging Improvement in Implements of Agriculture.*

I. To the person who shall produce at Woburn sheep shearing 1802 the best and most useful newly-invented implement—the sum of *twenty guineas.*

As it is the intention in giving this premium both to encourage and to introduce to general notice such improvements in implements of agriculture as appear of real utility, it will be left to a committee to decide, 1st, Which implement produced deserve the preference;—2dly, Whether any of them merit the reputation that the acquisition of a premium might confer.

II. To the person who shall produce the plough which shall with the least force turn the deepest and cleanest furrow—*cap, value ten guineas.*

The implements to be brought to the park farm on Tuesday.

*For 1803.*

To the farmer in Bedfordshire who shall produce the most satisfactory account of comparative trials between the drill and broadcast culture of wheat, barley, or oats, on not less than ten acres, being in the same field—*thirty guineas*.

It is required that the farmers who shall be candidates for this premium do give notice to the Duke of Bedford of their intention, that the crops may be viewed while growing by such persons as the Duke may appoint.

It is expected that the account should contain a description of the soil, the preparation, manure, if any, quantities of seed sown and drilled, hoeings, time and regularity of ripening, harvesting, and produce, verified by sufficient certificates, to be produced at the Woburn sheep shearing in 1803.

N. B. It is required that the drilled crops should be kept perfectly free from weeds.

---

On the Thursday, after dinner, the prize cups being placed before his Grace, he rose, according to the annual custom, and announced to the company the several decisions of the judges, which he read.

The Duke then remarked, that as the exertions in claim of the premiums for laying out money in the purchase of stock had been consi-

derable, and many of the breeds were spread through the county, he had for the year ensuing proposed but one premium; and he should in future, probably, drop this class of premiums altogether. As the New Leicester and South-Down sheep were now in the farmers' hands, they must speak for themselves; he had no prejudices for any breed, and only wished that such trials should be made as might bring conviction which was really to be preferred. To attempt by premiums to force any thing further than this was not his object.

The farmers will now decide for themselves by experiment, and not by opinion. The laudable example of Mr. Smith, of Hertfordshire, proves that prejudices are giving way; nor can the Bedfordshire farmers do better than imitate such comparative trials.

Relative to the decision on the fat wethers his Grace observed, that the judges had suggested the propriety of rejecting corn-fed sheep; but he conceived that the decision would effect it, and deter any one from that practice. He was happy, however, to find, that both in the case of wethers and theaves the sheep shown were highly approved; and if the Bedfordshire farmers had heard all that had been said on the occasion, it would have stimulated them to become rivals to almost any county. A happy change; for it is well known

that they once did not stand very high; but with such exertions as are now making, he trusted the reputation of the county would be established.

In explaining his motive for adding the premiums to the best shearers, his Grace remarked that it was an object of considerable consequence. There were some good ones in Bedfordshire, but not many, and by multiplying them much wool would be saved. Some gentlemen might think it a small object, but this was not the case; for on the mass of all clipping a few ounces per head would amount to a quantity that rendered it a national object. If any gentlemen of the county had very good shearers, it was to be hoped they would bring them.

The Duke then took notice of the discussion which had taken place upon ploughs; and said, that as it was an object which excited attention, he was glad he had added a premium for it. Competition is the only mean to ascertain which is the best; and should it be found that Bedfordshire is disgraced by its own plough, the sooner it is got rid of the better.

On the premium for the comparison of the drill and broadcast husbandry, he observed that opinions were extremely at variance. Possibly these methods might not yet have been tried

VOL. XXXVII. No. 211. Q

with sufficient accuracy. That from what he had seen, he was much inclined to prefer the drill, when well managed; but if there be not a determination to extirpate all weeds and keep the drills absolutely clean, it is better not to attempt that culture. The land should certainly be clean before any trial begins; then only annual weeds will be found, and the hoeings effective in destroying them.

His Grace then generally congratulated the county on the progress made, and expressed his hope that it would year after year advance, and that the Bedfordshire farmers would derive an increasing credit from their laudable exertions.

The first cup was then presented to Mr. Bithrey, and his health drunk in a bumper, &c. &c.

---

### THE FIRST PRIVATE BILL OF ENCLOSURE EVER PASSED.

An Act for Enclosing *Ropley Commons*, in the County of *Southampton*; and for the Improvement of the old disparked Park of *Farnbam*, in the Counties of *Surrey* and *Southampton*.—8 *Ann. Private Acts*, No. 20.

WHEREAS there is a tract of ground called *Ropley Commons*, containing by estimation five



*hundred acres, more or less, parcel of the manors of Bishop's Sutton and Ropley, in the county of Southampton, in which the tenants of the same manors have the sole right of commoning, and depasturing their cattle levant and couchant on their respective tenements parcel of the same manors, exclusive of all others whatsoever: And whereas the said Ropley Commons are at present of small annual value, but capable of improvement, in case the tenants of the same manors might have the liberty of enclosing, ploughing, and sowing the same, and many poor people would be employed in making such improvements, which will tend to the public good: And whereas the tenants of the said manors have agreed to divide and enclose the said Ropley Commons, and to allot to every tenant of the said manors his due share and proportion, according to their respective interest and right of common therein; and that each and every one of them would accept and take such a proportion and share therein as shall be set forth and allotted by William Godwin, late of Ovington, in the said county of Southampton, yeoman, Richard Seward, late of Bishop's Sutton, in the said county, yeoman, and Henry Whitear, of Lanham, in the parish of Old Alresford, in the said county, yeoman, men indifferently elected and chosen by the said tenants to divide and allot the same according to the several*

*interests and rights aforesaid ; and that each tenant, in manner directed, should fence and hedge in the share and dividend to him so to be allotted, and keep the fences so to be made in good repair, and for ever enjoy the parts so to be respectively allotted in severalty, and as parts of their respective tenements, in respect or right of which such parcels, allotments, and dividends shall be made.*

AND WHEREAS the old disparked park of *Earnham*, in the counties of *Surrey* and *Southampton*, part of the bishoprick of *Winchester*, is likewise capable of being greatly improved, in case tenants might have a certain interest therein for their encouragement to make such improvements, which would also be for the public good : *And whereas* a house, called *The Lawday House*, lately standing in such park, was accidentally burnt down and consumed : Wherefore, for the rebuilding of the same, and for the making such improvements as aforesaid, and for the encouragement of the said tenants therein, *Jonathan*, Lord Bishop of *Winchester*, the Warden and Fellows of *Winchester* college, together with the tenants of the said manors of *Bishop's Sutton* and *Ropley*, Do respectively, and in the most humble manner beseech your Most Excellent Majesty, That it may be Enacted, and be it Enacted, by the Queen's Most Excellent Majesty, by and with the advice and consent of the Lords

*Spiritual and Temporal, and Commons in this present Parliament assembled, and by the authority of the same, that the commons called Ropley Commons, parcel of the manors of Bishop's Sutton and Ropley, in the county of Southampton, shall, on or before the twentieth day of December, which shall be in the year of our Lord one thousand seven hundred and ten, be divided and allotted by the said William Godwin, Richard Seward, and Henry Whitear, or the survivors of them, unto and amongst the said several tenants and persons according to their respective interests and right of common appertaining to their respective tenements; and that each tenant of the said manors shall hold and enjoy his share and part so to be allotted to and with his respective tenement, as part of the same, and to have as great and the same interest and estate in the part so to be allotted as he and they respectively now have in the respective tenements to which or in respect whereof such allotments are to be made, and fence, hedge in, and enclose the same in such manner and proportion as the said William Godwin, Richard Seward, and Henry Whitear, or the survivors of them, shall at the making such allotments direct and appoint; and that the aforesaid allotment be in writing, and be enrolled in the courts of the said manors. And be it further Enacted, by the authority aforesaid, That the*

said Lord Bishop of *Winchester*, and his successors for the time being, shall and may from time to time, and at all times hereafter, demise, lease, and grant all the said old disparked park to any person or persons, for any term of years not exceeding twenty-one years, from the making thereof, reserving the annual rent of seventy pounds to be paid half yearly for the same, and to continue payable during such lease or demise, to the said Lord Bishop and his successors, Bishops of *Winchester*; Saving to the Queen's Most Excellent Majesty, her heirs and successors, and to all other persons and bodies politic, their heirs and successors (other than the tenants of the said manors of *Bishop's Sutton* and *Ropley*, and their heirs, and the said Bishop of *Winchester* and his successors) all such estates, rights, and interests as they, or any, or either of them had or might have had if this Act had not been made.

#### PROGRESS OF THE BILL.

##### *Lords.*

Read a first time, 25th Feb. 1709.—*Lords' Journ.* vol. xix. p. 80.

Read a second time, and a very large and respectable committee appointed, 27th Feb.—P. 82.

Report.—P. 108.

Read a third time, and sent to the Commons,  
17th March.—*Lords' Journ.* vol. xix. p. 110.

*Commons.*

Received from the Lords, 17th March, 1709.  
—*Com. Journ.* vol. xvi. p. 374.

Read a first time.—*Ditto.*

Committed, 20th March.—P. 376.

A violent petition against it, 23d March.—  
P. 381.

Reported, 25th March.—P. 384.

Passed, 27th March.—P. 386.

Royal assent, 5th April, 1709.

OBSERVATIONS ON THE MEANS OF  
ENABLING A COTTAGER TO KEEP  
A COW BY THE PRODUCE OF A  
SMALL PORTION OF ARABLE LAND.

BY SIR JOHN SINCLAIR, BART. M.P.

*Drawn up for the Consideration of the Board of Agriculture  
and Internal Improvement.*

IN several parts of the kingdom, as in Lin-  
colnshire, Rutlandshire, &c. which are calcu-  
lated for grazing, it is not unusual to give in-  
dustrious cottagers as much land as will enable

them to keep a cow, and sometimes two, besides other stock; and it appears from the communications of Lord Winchilsea and others to the Board of Agriculture, from the publications of the Society for Bettering the Condition of the Poor, and from a late interesting work printed by Mr. Arthur Young\*, that such a system is productive of the happiest consequences. It is supposed, however, to be totally inapplicable to an arable district. I trust that such an opinion will not be admitted without full consideration. Indeed, so far as I can judge, this advantageous system is to the full as well adapted for the one district as for the other. It requires unquestionably more labour on the part of the cottager, and of his family; at the same time, the occupation of so great an extent of ground is not so necessary in arable as in grazing countries; a circumstance, in various respects, extremely material.

In arranging the following plan (which the reader will please to consider merely as furnishing an outline to be perfected by farther discussion and experiment), it is proposed to keep in view the following principles:

1st. That the cottager shall raise by his own

\* Entitled, "An Inquiry into the Propriety of applying  
"Wastes to the better Maintenance and Support of the  
"Poor."

labour some of the most material articles of subsistence for himself and his family.

2d. That he shall be enabled to supply the adjoining markets with the smaller agricultural productions; and

3d. That both he and his family shall have it in their power to assist the neighbouring farmers, at all seasons of the year, almost equally as well as if they had no land in their occupation.

It can hardly be questioned, that if it were practicable to have a number of cottagers of that description in every parish, it would promote, in various respects, the interests of the public.

### *I. Extent of Land necessary.*

Unless the experiment were fairly tried, it is impossible to state exactly the extent of arable land requisite to enable a cottager to raise the articles generally necessary for the sustenance of himself and family, and to keep a cow, some pigs and poultry. Much must depend upon the natural richness of the soil (though under the management about to be proposed almost any soil would in time become fertile), on the nature of the climate, on the size of the cow, on the industry of the cottager, on the age and number of his family, &c. But I should ima-

gine that three statute acres and a quarter of good arable land, worth from 20 to 30s. per acre, would be sufficient. It is proposed that the three acres shall be under a regular course of cropping. The quarter of an acre ought, if possible, to be converted into an orchard, where the cow might occasionally pasture, and where a pond ought to be kept in good order, that it may have plenty of water at command. Were the land of a quality fit for lucerne, perhaps two acres and a quarter might be sufficient.

## II. *Stock and Instruments of Husbandry.*

It is evident that so small an extent of land as either two or three acres, under cultivation, excludes all idea of ploughing\*, and, indeed, unless the cottager shall manage the whole in the simplest and cheapest manner there is an end to the whole system. It would require, indeed, four or five acres to keep a single horse, and the expence of purchasing horses, or even oxen, ploughs, and other instruments of husbandry, must be far beyond the abilities of a cottager; whereas with a spade, a hoe, a rake, a scythe, a sickle, and a flail, which are all the in-

\* Ploughs might, perhaps, be hired; but, on the whole, the spade culture is infinitely preferable, and I would much rather see a cottager hire persons to trench than to plough for him.



struments really necessary, he is perfectly competent to the management of his little farm.

### III. *Course of Crops, &c.*

The three acres proposed to be cultivated should be divided into four portions, each consisting of three roods, under the following system of management.

	Roods.
Under potatoes, two roods; turnips, one*	- 3
Under winter tares, two roods; spring tares,	
one - - - - -	3
Under barley, wheat, or oats - - -	3
Under clover, with a mixture of rye grass†	3
	<hr/>
Total - - -	12
	<hr/>

Other articles besides these might be mentioned, but it seems to me of peculiar importance to restrict the attention of the cottager to as few objects of cultivation as possible.

It is proposed, that the produce of the two roods of potatoes shall go to the maintenance of

\* I would also recommend a small quantity of flax, where the culture and management of the plant was known, to employ the females particularly in the winter, and to supply the family with linen.

† Some recommend the proportion at per acre to be at the rate of one bushel of rye grass to 12lb. of red clover; others 14lb. of red clover to half a bushel of rye grass.

the cottager and his family\*; and that the rood of turnips should be given to the cow in winter, and during the spring in addition to its other fare.

The second portion, sown with tares (the two roods of potatoes of the former year to be successively sown with winter tares, and the turnip rood with spring tares), might partly be cut green, for feeding the cow in summer and autumn; but if the season will permit, the whole ought to be made into hay for the winter and spring feed, and three roods of clover cut green for summer food.

The third portion may be sown either with barley, wheat, or oats, according to the soil or climate, and the general custom of the country. The straw of any of these crops would be of essential service for littering the cow, but would be still more useful if cut into chaff for feeding it.

The fourth portion, appropriated to clover and rye grass to be cut green, which, with the assistance of the orchard, will produce on the three roods of land as much food as will main-

\* By Sir John Methuen Poore's experiments it was found, that half a rood, or one eighth of an acre, produced for several years as great a weight of potatoes as was sufficient for a family of four persons.—Four acres answered for 131 persons.

tain a cow and her calf for five months, namely, from the end of May, or beginning of June, when it may be first cut, to the first of November, besides some assistance to the pigs. It is supposed that an acre of clover and rye grass cut green will produce 20,000lb. weight of food for cattle. Three roods, therefore, ought to yield 15,000lb. weight. A large cow requires 110lb. weight of green food per day; a middling cow, such as a cottager is likely to purchase, not above 90lb.; consequently, in five months, allowing 1320lb. weight for the calf and the pigs, there will remain 13,680lb. for the cow\*. Were there, however, even a small deficiency, it would be more than compensated by the rood of land proposed to be kept in perpetual pasture as an orchard.

#### *IV. Mode in which the Family may be maintained.*

It is calculated that three roods and eight perches of potatoes will maintain a family of six persons for about nine months in the year; but, according to the preceding plan, it is proposed to have but two roods under that article; for however valuable potatoes are justly accounted, yet some change of food would be ac-

\* These calculations are merely given as data for experiment. It must depend upon the season whether the tares or the clover should be made into hay.

ceptable, and the cottager will be enabled, from the produce of the cow, and by the income derived from his own labour, and from that of his family, to purchase other wholesome articles of provision.

*V. Manner in which the Stock may be kept.*

It appears from the preceding system of cropping, that ten roods of land, or two acres and a half, are appropriated to the raising of food for the cow in summer and winter, besides the pasture of the orchard ; and unless the season should be extremely unfavourable, the produce will be found not only adequate to that purpose, but also to maintain the calf for some time, till it can be sold to advantage. It is, indeed, extremely material, under the proposed system, to make as much profit of the calves as possible, as the money thus raised will be a resource enabling the cottager to replace his cow, when a new one must be purchased.

For the winter provision of the cow, which is the most material, because summer food can be more easily procured, there is the produce

1. Of about three roods of tares made into hay.

2. Of three roods of straw, deducting what may be necessary for litter ; and if dry earth be put into the cow's hovel, and removed from

time to time to the dunghill, little or no litter will be necessary.

3. Of one rood of turnips.

The whole will be sufficient for seven months in the year, namely, from the 1st November to the 1st June; and during the remaining five months the pasture of the orchard, some of the winter tares, and the produce of three roods of clover and rye grass, will not only suffice, but will furnish a surplus for the calf, if it is kept for any length of time\*, and some clover for the pigs.

The inferior barley, potatoes, &c. will of course be given to the pigs and the poultry.

VI. *Value of the Produce.*

The land thus managed will certainly pro-

\* In a pamphlet just published by Richardson, Cornhill, on the culture of potatoes, price 1s. the following mode of applying the refuse potatoes to the feeding of calves is strongly recommended.—“ Take two gallons of small potatoes, wash them clean, put them into a pot of boiling water sufficient to cover them, and let them boil till the whole becomes a pulp: then add more water, and run the whole through a hair sieve, which will produce a strong, nutritive gruel. At first use a very small quantity, warmed up with milk, to make it palatable to the calf, and increase the quantity daily, till it becomes equal. A quart of potatoe gruel, and a quart of scald or skimmed milk, will be sufficient for a good meal, which should be given warm three times a day.”

duce, by means of the extra industry of the family, and at a small expence, a most important addition to the income which the cottager may derive from his ordinary labour. For instance,

1. The orchard, after the trees become fruitful, will probably yield	-	-	£. 1	10
2. Three roods of turnips and potatoes			4	0
3. Eighteen bushels of barley, at 4s.	-		3	12
4. The cow and calf *	-	-	7	0
5. Hogs	-	-	3	0
6. Poultry and eggs	-	-	2	0
Total				<hr/> 21 2 <hr/>

Where wheat can be raised instead of barley the profit would be still more considerable. Opinions will differ much regarding the value put on each article ; but that is of little consequence, as the total cannot be accounted too high.

#### VII. *Time required for cultivating the Land.*

The quantity of land intended to be cultivated

\* According to Mr. Kent's calculations, a cow should produce six quarts of milk per day, worth 1d. per quart; equal to 3s. 6d. a week, or 9l. 2s. per annum, setting the profit of the calf against the loss sustained when the cow is dry : but it is better to be rather under than over the mark.

will not materially interfere with the usual labour of the cottager; it will only require to be dug once, and is then fit to be cropped. It is proposed that only nine roods shall be annually cultivated (the remaining three roods being under clover and rye grass); and nine roods may be dug in the space of about 558 hours, or at the rate of sixty-two hours per rood. This might be done at bye hours (more especially when the family of the cottager shall be somewhat advanced, and, consequently, more able to furnish assistance); but supposing that the digging, manuring, harvesting, &c. will require twenty entire days per annum, in addition to the bye hours, and allowing sixty days for Sundays and holidays, there will remain 285 days for the ordinary hand labour of the cottager, which, at 1s. 6d. per day, would amount to 21l. 7s. 6d.; the earnings of the wife and children may at an average be worth at least 4l. per annum more. This is certainly a low calculation, considering how much may be got during the hay and corn harvest; but even at that moderate estimate, the total income of the family will be as follows:

1. Produce of the farm	-	£. 21	2	0
2. Labour of the cottager	-	21	7	6
3. Earnings of the family	-	4	0	0
Total		£. 46	9	6

VIII. *Buildings.*

It is impossible to calculate the expence of building a cottage, as so much depends on it's size, the place where it is situated, the materials of which it is composed, the price of labour in the country, and a variety of other circumstances. On this important subject much useful information is contained in the first volume of the Communications published by the Board of Agriculture. But it is proper to observe that no expensive additional buildings will be necessary in consequence of the proposed system. A shed or hovel for the cow cannot occasion much expence, and a small barn of the simplest and cheapest construction may be of use not only for threshing the crop, but also for securing the hay, and making it to more advantage, in case the season should prove unfavourable; if the corn is put up in small stacks, the barn may be made of very moderate dimensions.

IX. *Rent and Balance of Income.*

The rents of cottages and of land vary so much in different parts of the kingdom, that it is difficult to ascertain an average. But if the cottage shall be stated at 3*l.* per annum, the land at 25*s.* per acre, and the orchard at 10*s.* the whole will not exceed 7*l.* 15*s.* The cottager will also be liable to the payment of some taxes, say



to the amount of 1l. 5s. more. Hence the total deductions would be about 9l. leaving a balance in favour of the cottager of 37l. 9s. 6d. Considering the cheap rate at which he is furnished with a quantity of potatoes, equal to several months' consumption, and with milk for his children, surely, with that balance he can find no difficulty, not only in maintaining himself and family in a style of comfort, but also in placing out his children properly and laying up a small annual surplus that will render any parish assistance, either in sickness or old age, unnecessary, preserving thus the manly spirit which it so well becomes a British cottager to possess.\*

CONCLUSION.

*Advantages of the proposed System.*

I shall now endeavour briefly to explain some of the advantages which may be looked for with confidence from the proposed system.

In the first place, the land possessed by the cottager would be completely cultivated and rendered as productive as possible. The dung produced by the cow, the pigs, &c. would be amply sufficient for the three roods under turnips and potatoes, which would afterwards produce, 1, tares; 2, barley; and 3, clover; with a mixture of rye

\* The different expence of fuel in various districts, will, it is evident, greatly affect the annual surplus.

grass in regular succession, without any additional manure. The barley should yield at least eighteen bushels, besides three bushels for seed; and if wheat is cultivated, in the same proportion. The milk, deducting what may be necessary for the calf and the cottager's family, might be sold in it's original state, if there shall be a market for it, or converted into butter for the purpose of supplying the neighbouring towns or villages. Such cottagers also might certainly send to market both eggs and poultry.

2. It is hardly possible to suggest a measure more likely to promote the benefit of a numerous and valuable body of people. The system of keeping cows by cottagers, which has been found so advantageous in the grazing districts, may thus be extended over the whole kingdom; and, indeed, if the above plan is found to answer, in place of four or five acres employed in feeding a single cow, it would be much better, even in the grazing counties, to restrict the land to a smaller quantity under a tillage mode of management.

3. It is of infinite consequence to establish the practicability of this system, as the means of removing a most unfortunate obstacle to the improvement of the country. It is well known to be the only popular objection to the enclosure of our wastes and commons, that while unen-

closed a number of cottagers are enabled to keep cows by means of their common rights, and that their cows disappear when the commons are enclosed. But if so small a portion of land as three acres and a quarter, when improved and properly cultivated, can enable a cottager to keep a cow to more advantage than with a right of common, which can hardly be doubted, as he is enabled to provide winter as well as summer food, there is an end to that obstacle to improvement. Indeed, if sufficient attention be paid to the principles above detailed, the situation of the cottager, instead of being deteriorated, would be materially bettered by the enclosure, and his rising family would be early accustomed to habits of industry, instead of idleness and vice.

I shall conclude with asking if any one can figure to himself a more delightful spectacle than to see an industrious cottager, his busy wife, and healthy family, living in a comfortable house rented by himself, cultivating his little territory with his own hands, and enjoying the profits arising from his own labour and industry; or, whether it is possible for a generous landholder to employ his property with more satisfaction, or in a manner more likely to promote not only his own but the public interest, than by endeavouring to increase the number of such cottagers, and encouraging by every means

in his power the exertions of so meritorious and so important a class of the community.

JOHN SINCLAIR.

*London, May 1801.*

---

APPENDIX.

The practicability of a cottager being enabled to keep a cow by the produce of arable land only is strongly confirmed by the following communication from Sir Henry Vavasour, Bart. to the President of the Board of Agriculture.

*To the Rt. Hon. Lord Carrington, P. B. A. &c.*

MY LORD,

*London, May 20, 1801.*

I HAVE had the honour of mentioning, in conversation to your Lordship, the advantages that appeared to me in cultivating land in the Flemish manner, or what is called about Fulham and that neighbourhood the *field-gardening* husbandry. I have for some years encouraged my cottagers in Yorkshire in this mode of managing their small garths or gardens, which are in general from one to three acres. I have now an opportunity of stating the husbandry of a poor industrious cottager's garth. As the man can neither read nor write, these particulars have been trans-

mitted to me from his own mouth; and as I saw his land almost every day during the last harvest, I can vouch that this account is not far from the truth.

<i>Produce.</i>	<i>Value,</i>					
	<i>L.</i>	<i>s.</i>	<i>D.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
240 Bushels of potatoes - - -	24	0	0	0	2	0
60 Ditto of carrots - - -	6	0	0	0	1	0
5 Quarters of oats, at 44s. per qr.	11	0	0	0	3	20
4 Loads of clover, part in hay, part cut green - - -	12	0	0	1	0	10
Turnips - - -	1	0	0	0	0	20
In garden stuff for the family, <i>viz.</i> beans, peas, cabbages, leeks, &c. - - -	0	0	0	0	0	30
	54	0	0*	3	0	0
Deduct rent, including the house	-	-	-	9	0	0
seeds, &c. - - -	-	-	-	3	0	0
value of labour - - -	-	-	-	10	0	0
				23	2	0
Produce before stated - - -				54	0	0
				23	2	0
Profit, if sold at market, exclusive of butter -				30	18	0

His stock was two cows and two pigs; one of his cows had a summer's gait for twenty weeks

\* These sums are conformable to the prices of this year, but it is evident that in other seasons they must in general be lower.

with his landlord. The land was partly ploughed, and partly dug with the spade; cultivated (the ploughing excepted) by the man, his wife, and a girl about twelve years of age, in their *spare* hours from their daily *bired* work, seldom a whole day off, except in harvest; made the rent in butter, besides a little used in the family. The man relates that he thinks he clears one year with another, from the three acres, about 30l. The daily wages his family earn about keep them. It is very evident that this man clears from his three acres more than a farmer can possibly lay by from more than eighty acres of land in the common husbandry of the country, paying for horses, servants, &c.; and it must be obvious to every one how great the advantages must be to society in cultivating land in this manner. It would have taken more than half the quantity of his three acres in pasture for one cow at grass during half the year; whereas (excepting the summer's gait for one of his cows, as mentioned before) his stock of two cows and two pigs is kept and carried on the whole year. The family live well, and a handsome sum has been yearly saved to place out two sons, and supply them with clothes, washing, &c.

I am, &c.

HENRY VAVASOUR,

P. S. The man's name is Thomas Rook,

*Plan of the proposed Cottage Farm, pointing out the Rotation of Crops in the different Lots.*

Cottage.	The orchard, or perpetual pasture.	Pond.		
<p>Lot A. 3 Roods 1 Year { 2 Roods potatoes 1 Rood turnips</p>		<p>Lot B. 3 Roods 1 Year { 2 Roods winter tares 1 Rood spring tares</p>		
<p>Lot C. 3 Roods 1 Year—Barley, wheat, or oats</p>		<p>Lot D. 3 Roods 1 Year—Clover and rye grass</p>		
The Rotation of Crops for four Years.				
Year.	Lot A.	Lot B.	Lot C.	Lot D.
1	Potatoes & turnips	Winter and spring tares	Barley, wheat, or oats	Clover & rye grass
2	Winter & spring tares	Barley, wheat, or oats	Clover & rye grass	Potatoes & turnips
3	Barley, wheat, or oats	Clover & rye grass	Potatoes & turnips	Winter & spring tares
4	Clover & rye grass	Potatoes & turnips	Winter & spring tares	Barley, wheat, or oats

The rotation then begins as at first. Lot D might continue in natural grass the first season, to diminish the labour of that year.

The exact period when the different crops should be dug for or sown cannot be ascertained, because it varies so much in different counties, and depends on the seasons; but, according to the above rotation, the labour of digging for the various crops is diversified as much as possible, so as not to interfere materially with the other occupations of the cottager. At no period would it be necessary for him to dig more than two roods in a month; and both he and his family will labour with much more satisfaction and dispatch when they work for themselves than for another. In case of necessity, the cottager might hire some of his neighbours to assist him in digging, which would be much better than hiring a plough\*.

\* These communications are very valuable and important; and I earnestly hope they will instigate my correspondents to report such cases as may throw additional light on this interesting inquiry.

A. Y.

**FOURTH REPORT FROM THE COMMITTEE APPOINTED TO CONSIDER OF THE PRESENT HIGH PRICE OF PROVISIONS.**

**T**HE Committee have received information respecting the situation of certain parts of the country, namely, about Braintree, Bocking, Halstead, and Coggeshall, in the county of Essex; the parish of Foleshill, near Coventry; and the townships of Dewsbury, Ossett, Ovenden, Clayton, and Northowram, in the west riding of the county of York;—to which they feel it indispensable to call the serious attention of the House.

From the extreme dearness of provisions, combined with the temporary and partial interruption of some branches of manufacture, the pressure upon the above-mentioned places is become so great as to require immediate relief, beyond what their own means are in the present moment capable of affording.

Whatever mode may be suggested, of applying to places of this description the principle of that clause in the 43d of Elizabeth, by which neighbouring districts may be rated in aid, it is probable that objections would be found suffi-



ent, if not ultimately to defeat the measure, at least to produce much delay.

The objections to any demand upon the general revenue of the state, for any such purpose, are so obvious, that it is unnecessary to state them; and they are felt so strongly by your Committee, that nothing but the pressing exigency of the case could have induced them to recommend any deviation from the general principles which have hitherto regulated the maintenance of the poor. They trust, however, that such checks and restrictions may be devised, for ascertaining and limiting the cases to which assistance should be extended, and for providing the means of gradual repayment, as will circumscribe in a considerable degree the demand upon the public in the first instance; will prevent the burthen from ultimately falling upon the public; and obviate the inconveniences resulting from so extraordinary an interposition of the benevolence of Parliament.

As soon as they are able to digest a plan for that purpose, which may be applicable to all cases where the necessity for such an interposition may be found to exist during the present emergency, your Committee will submit the same to the wisdom of the House; but, in the mean time, they beg leave earnestly to recommend, that a sum, not exceeding 20,000*l.* should

be granted to his Majesty, upon account, to be applied in such proportions as may appear to be indispensably necessary for the immediate assistance of those places to which your Committee have referred, and of such others as may appear to be under circumstances of pressure equally urgent.

But your Committee not having fully and satisfactorily been able to inquire into all the circumstances even of the special cases above enumerated, are of opinion, that no money should be issued for the assistance of those places, or any of them, without the strictest previous examination, either by a particular Commission which may be instituted for that purpose, or by inquiry made upon oath before magistrates in the neighbourhood, and transmitted to the Lords Commissioners of his Majesty's Treasury. It is, however, necessary to remark, that the extreme distress of some of these places renders it expedient that as little delay as possible should occur in conducting such investigations.

The resolutions to which your Committee have come are as follow :

*Resolved*, That it is the opinion of this Committee, that they will proceed to consider under what restrictions it may be expedient to recommend a temporary advance of public mo-

ney to places in situations of extreme and peculiar distress ; that in the mean time, from the present exigency, the Committee think it necessary to recommend, that, with a view to the immediate relief of certain places, the House should grant to his Majesty such sums as may be deemed necessary to be advanced by way of loan for the assistance of those places where the pressure is most urgent.

*Resolved*, That it is the opinion of this Committee, that the money to be advanced by way of loan should be repaid by the parish, township, or place to which such loan shall have been made respectively.

---

#### FIFTH REPORT FROM THE COMMITTEE APPOINTED TO CONSIDER OF THE PRESENT HIGH PRICE OF PROVISIONS.

**T**HE Committee have proceeded, in conformity with their last report, to digest a plan for the purpose of ascertaining and limiting the cases in which assistance should be extended, by a temporary advance of public money, for the re-

lief of places labouring under urgent and peculiar distress; and for providing the means of gradual repayment of the sums advanced.

In the execution of this duty, your Committee have come to several resolutions, calculated to obviate, in a great degree, the inconveniencies resulting from this extraordinary interposition of the benevolence of Parliament, which, on the most mature consideration, your Committee feel it necessary strongly to recommend.

The resolutions of your Committee are as follow:

*Resolved*, That it is the opinion of this Committee, that none of the money to be advanced upon loan to parishes or townships shall be granted, unless where the commissioners are satisfied that the parish or township applying for relief is absolutely unable to prevent extreme distress without some assistance.

*Resolved*, That it is the opinion of this Committee, that the intended relief should be confined to parishes and places in which the total produce of the rate levied for the year ending at Easter 1801 shall have exceeded considerably the produce of the rate for the year ending at Easter 1800; and that no greater sum be advanced for relief in the current quarter than three fourths of the sum by which the sum ex-

pended in the relief of the poor, in the quarter immediately preceding, exceeded the sum expended in the quarter ending at Easter 1800 : but that a power ought to be given to depart from the rules contained in this resolution in extraordinary cases which will not admit of an adherence to them : provided nevertheless, that such departure shall never take place without the reasons on which it is founded being regularly recorded in writing by those who have the management of the fund out of which relief is to be granted.

*Resolved*, That it is the opinion of this Committee, that the churchwardens and overseers of the poor praying for relief on the behalf of any parish or township should be required to prepare a statement, setting forth the amount of the rental, according to which the poor's rate is levied, specifying whether that rate is levied on the full rack rent, and if not, specifying what proportion the rental on which that rate is raised bears to the full rack rent ; also setting forth the sums raised by the poor's rate in each of the five last years, and in the last quarter immediately preceding the application for relief, and in the quarter ending at Easter 1800 ; also the increase of the number of the poor, and the decrease of the number of those who have actually paid to the rates in the course of the

last year, compared with the preceding year ; the reasons of the decrease of the number of those who pay to the rates ; the nature of the employments followed by the different descriptions of the poor, and the degree in which the poor are able to obtain employment, and if employed, whether their earnings are diminished or increased, and in what proportion ; and that such statement should be subscribed by two of his Majesty's justices of the peace in the neighbourhood, declaring, under their signatures, that they believe the statements to be true, and that the respective parishes or townships are absolutely unable to prevent extreme distress by any legal measures in their power : and that the statements so subscribed should be sent, together with such observations and explanations as such justices may think it right to give, to the Lords of his Majesty's Treasury, or to such commissioners as they may appoint for receiving the same ; and that such Lords of the Treasury or commissioners should be empowered to require from the said overseers and churchwardens or justices, any further information they may think requisite, and to advance such sums to the churchwardens and overseers of the poor of those several parishes and townships which in their judgment ought to be relieved as shall appear to them requisite and advisable,

and consistent with the former resolution relative to the amount of the relief to be granted.

*Resolved*, That it is the opinion of this Committee, that the churchwardens and overseers of the poor, or one of them, should give vouchers for the sums so received; and that the said sums should be repaid by the parishes receiving the same respectively, by ten half-yearly instalments; the first instalment to be paid at Lady day 1804 at furthest; and that the instalments for repaying the said sums should be raised, like the poor's rate, by a proportionate levy on those who pay to that rate in each parish or township; and that the commissioners of the land tax should direct the said instalments to be raised, on receiving warrants from the Lords of the Treasury, or from commissioners appointed by them; and that the commissioners of the land tax should be invested with the same powers and authorities for enforcing the payment of such instalments, and employ the same or similar agents for that purpose as they now possess and employ for raising the land tax.

## ON CLAY AND MARLE.

BY MR. JOSIAH RODWELL\*,

*Of Livermere, near Bury, Suffolk.*

MY LORDS AND GENTLEMEN,

BEING informed that you have voted to an excellent farmer in Surrey, justly celebrated for his exertions, a mark of your approbation, it has been suggested to me by some neighbours, who have for 28 years viewed what I have done to improve a poor and almost waste tract of land, to send you an account of my operations; which I have complied with, trusting that this is the most likely method of inducing others to examine well their soils, and whatever may be found beneath: my practice is confined and limited; but your attention can spread any knowledge throughout the kingdom, and render the exertions of an individual beneficial to a whole nation.

I wish at present to call your notice to the effect of digging and spreading marle and clay upon poor dry heaths producing fern and gorse, but chiefly ling; originally of small value, at

\* A specimen of the communications to the Board of Agriculture.



best yielding but a scanty support to ill-fed sheep.

The Rev. Mr. Lathbury's father, about 50 years ago, was offered any quantity of this heath at 4d. per acre: the farm on which I have been working consists of 1400 acres, 700 of which were of this sort of heath; it had been occupied by my predecessor, Mr. Garnham, for 36 years, at the rent of 140l. and never more than 150l. the landlord (Bapt. Lee, Esq.) paying tithe, nor did Mr. Garnham at that rent do much more than make a living in it. In 1771 it was valued for raising the rent, and 350l. a year demanded, not tithe free, at which rent Mr. Garnham refused it, as did several other farmers, who examined the land; and when I engaged at that rent I was pronounced a ruined man by most of my acquaintance who knew the farm. I had a lease of 13 years.

My operations at first were to enclose with thorn hedges, marle or clay, and break up 300 acres of the heath; and in the first seven years of the lease I finished what I meant to improve in that term; I marled or clayed 600 acres, at 70 loads an acre, being 42,000 large tumbril loads. In this work I employed three teams, two of my own, and one I hired for several years. It is severe work, and the second year I lost nine horses, attributed to feeding on pea

straw from the new-broken heath, a circumstance that deserves the attention of improvers.

In the 11th year of my lease I applied to my landlord for a renewal; on which the farm was valued again by Mr. Hare, the surveyor at Peterborough, and I took a fresh lease of 15 years, to commence at the termination of my old one, at the rent of 400l.

I immediately clayed and broke up 200 acres more, at 100 loads an acre, 40 bushels per load, enclosing all with quick hedges, and ditches five feet wide and four deep; after this I improved 100 acres more in the same manner.

In the two leases of 28 years I clayed or marled 820 acres; and I have clayed or marled so much a second time, at 70 loads an acre, that the quantity I have carried in all is very little short of 140,000 loads.

Upon taking a third lease I was, in 1798-9, particularly steady to this work, and in 49 weeks and three days carried 11,275 cubical yards, paying by measure of pits, and not by loads, which were filled and spread by four men and a boy, and carted by six horses and two tumbrils.

In this business of carrying clay or marle I have practised handbarrowing; the men can make good earnings at 10d. a yard, wheeling it 30 rods; and down to 7d. a yard at shorter dis-

tances ; and I am much inclined to think, that if we had workmen used to the operation, and handy at it, like those employed in navigations, that this method would be of all others the cheapest, especially on heavier soils. But by far the greatest part I have done by tumbrils, the expence of which put out is 5d. per yard for a team, and 2½d. a yard for labour, and paying for laying picks, wedges, &c. also for stones that rise, increase the whole expence to 8d. per yard, which is at least a halfpenny per yard cheaper than I can do it with my own teams: the reason of which is, that the man who contracts with me drives his own horses, and looks after them. At 8½d. per yard, 140,000 yards have cost me 4958l. excepting the small proportion *bired* at a halfpenny a yard lower.

I come now, my Lords and Gentlemen, to mention a few circumstances which I hope may tend to render this paper useful to others not having the experience which I have acquired: I shall use but few words, but they shall be founded on positive experiment or attentive observation.

Clay is much to be preferred to marle on these sandy soils, some of which are loose, poor, and even a black sand. By clay is to be understood a grey clayey loam, some of it brick earth, and all has with vinegar a small effervescence.

Marle is a white, greasy, chalky substance, that effervesces strongly with acids : I make a universal rule, on a second improvement, to lay clay on the fields marled before, sometimes marle where clay was spread before; but this not general, as clay answers best on the whole.

In the tillage of improved lands, I am attentive never to over crop. My usual rotation has been,

1. Turnips.
2. Barley.
3. Clover, rye grass, and trefoil one or two years.
4. Peas.
5. Wheat.

On some I have sown oats on the layer, and omitted peas and wheat, which are more favourable to the land; and I should with longer leases have done more so. Peas, it is true, are an improving crop, but the two coming together are perhaps working the marle too quickly. I have broken some heath up and sowed oats, and even wheat, designing to improve on the stubble; but sowing four bushels of oats I have gained but ten, and of wheat not more than three coombs\*, at first breaking.

My crops, by managing attentively, have

\* The coomb is half a quarter.

been good; I have had  $11\frac{1}{2}$  coombs of barley an acre, and even 14, and these over large fields; I have had seven coombs an acre of peas over six score acres, and fine wheat after them.

On 90 acres, clayed 100 loads an acre, I have had after two crops (the one turnips the other barley) cole seed, and sold it on the ground for 1000 guineas; then turnips, a famous crop, followed by barley, on 75 acres, 16 coombs an acre; and by oats, on 15 acres (poorer land), 10 coombs an acre. These crops are for the soil *great*, but in general my products have been highly to my satisfaction.

In regard to other manures, my farm has had the fold of from 40 to 48 score sheep; they manure, one year with another, 150 acres; and I am never without bullocks for increasing the farm-yard dung. I top fold wheat from the beginning of November till Christmas, and even till February, and venture it on clayed land at the hazard of frosts at sun rise, which sometimes injure it much, but the effect in general is great. Of all mucking, that for turnips pays me best, particularly on clayed land: I know many farmers in Norfolk prefer laying it on for wheat, the turnips to have it at second hand; but I prefer the other method. And let me note that I use long muck, to choose, which I think far better than turning, mixing,

and rotting muck ; here also are different opinions ; I speak only from my own experience. Wheat stubble, I think, should always be whelmed in for turnips.

I once ploughed in a fine crop of buck wheat for turnips, and the crop was so much worse than the rest of the field, that they were not penned regularly for the sheep ; yet, with this disadvantage, the barley following was better than where the turnips were much superior.

I have dibbled largely, and with good success, and think it the best method ; and I approve much of the drill roller as the next best.

In tilling these improved sands, it is a common observation in Norfolk, that shallow ploughing is necessary to preserve *the pan* : I have not found this the case here ; but, on the contrary, that the clay and marle work the better the more soil they have to incorporate with.

Having thus stated shortly the general managements of my improvements, I now come, with your permission, to the general result. Rent will speak this :

It is stated, that 28 years ago the rent of farm was 150*l.* a year tithe free, and that it was then raised to 350*l.* a year, tithe payable. I may venture to assert, that, at that rent, without improvement, it might have so stood on my landlord's rent roll till doomsday, for a mere

living could only be made on it, even in good times. But upon my taking the third lease, commencing in 1799, it was raised to 600l. a year, at the same time that to the full value of 100l. a year was taken from it; in other words, the present rent is 700l. a year. Thus, while, with the blessing of God, I have done well in the farm, and have put five children into the world out of twelve living, I have added 350l. a year to the value of the estate, which, at thirty years' purchase, is 10,500l.; and, relative to the public at large, I may venture to assert, that these 1400 acres have in the last 28 years yielded 30,000l. worth more of corn, meat, and wool than they did in the 28 preceding: a fact which tends strongly to show the national importance of improvements in agriculture, and also the wisdom of establishing a public Board for promoting and encouraging such exertions as may be deemed laudable.

I have the honour to be,

My Lords and Gentlemen,

Your most obedient servant,

JOSIAH RODWELL.

*Livermere, near Bury, Suffolk,*

*Nov. 18, 1799.*

*[The gold medal of the Board was voted to Mr. Rodwell for this communication.]*

## SOME, NOTES ON FARM BUILDINGS.

*Mud Wall.*

**A**T Pimper, near Blandford, there is a mud wall of marle that has stood 240 years, and is at present quite firm.

*Barn Floor.*

**Mr. Bevan** laid a brick floor which has not in some years given way in the smallest degree. First he laid a foundation, twelve inches thick, of stones and sand; then six inches of chalk rubbish, grouted with water and rammed down; then two inches of sand, in which the bricks are set on edge in the herring-bone form and grouted with hot lime.

*Barn Tiling.*

In Norfolk, about Harling, they lay their pantiles on a bed of reed plastered, and ceiled with mortar within between the spars; which is found a sufficient defence against the fork ends, while the barn is filling with corn. Expence per square.

			£.	s.	d.
175 Tiles at 9s. per 100	-	-	0	15	9
12 Pantile lath	-	-	0	3	0

---

Carried forward - 0 18 9



					£.	s.	d.
					-	0	18 9
Brought forward							
Reeds	-	-	-	-	-	0	1 0
Nails	-	-	-	-	-	0	2 0
Mortar	-	-	-	-	-	0	5 0
Workmanship	-	-	-	-	-	0	5 6
					<hr/>		
					1 12 3		
					<hr/>		

*Bricks.*

Wymondham, in Norfolk, is famous for some articles in the brick way, which they make to very good perfection, particularly pavements (provincially *pammants*) of white earth, a foot square; the grain fine; price 32s. the hundred. Pipes also for the mouths of hollow drains, which lay one on the other, and form a tube of  $2\frac{1}{4}$  inches diameter; these at  $21\frac{1}{2}$  inches in length 6d. each, or 1s. the pipe.

---

In the new improvements in Cambridgeshire, between Bourn Bridge and Newmarket, two circumstances are found which have governed the business of building. The sheep walk, which has been broken up and converted into arable enclosures, or intended so to be converted, the farms are generally in long strips from the hills down

to the vale; the houses and tillage were at the higher end of these strips, within the old and rich enclosure, in some instances two or three miles off. When, therefore, the extremity of these long and narrow farms were cultivated, which had formerly been walk, it was absolutely necessary to raise buildings enough to form yards, &c. and at least a cottage for an overlooker. This has accordingly been done to every farm, and it gives for ten miles together the appearance of a much greater improvement than is to be seen in some hundred miles where new buildings have not been equally necessary. There are three or four entire new residences formed with every convenience around them, but in general only a cottage or two with barns, stable, &c. This is a part of the undertaking which seems to have been least reflected. It is an expensive barbarity to build barns now that threshing machines are so highly improved. Many hundred pounds have been thus thrown away in these improvements, and are now throwing away through absolute ignorance. These landlords, and their stewards and tenants are too wise and too economical to read the Annals of Agriculture, or they might have seen plans which would have given them much better conveniences at half the expence which has here been incurred. It seems to me that so much has in some cases

been expended as to convert the improvement into a loss to the landlord.

Mr. Stanley, at Southoe, Hunts, upon his noble farm there, has raised many and excellent buildings, which surround several yards, in which are abundance of conveniences ; but had he done it systematically, by means of a threshing mill well connected with every necessary object, I think he might have saved an expenditure of perhaps 1500l. and 50l. a year in labour. But he is not singular ; I know of no complete farm yard, or any thing like it.

*Dairy.*

In the dairy of Mrs. Wing, at Thorney Abbey, I found both slate and lead trays for the milk, and that lady informed me that the slate ones would not keep the milk sweet so long as lead ; but Mrs. Coleman, from Leicester, (whence these slates came) observed that in a short time they yield more cream.

*Dung Canal.*

In building stables and arranging a garden, Mr. Duherly, of Gains, in Hunts, has executed an idea which has merit. He has cut a canal from the stable to the melon ground ; the dung is thrown at once into a barge and conveyed to the spot where it is used. I care not for the melon culture, but the idea should be applied

to better purposes; and many are the soils and situations in which the use would be very great of such a convenience, and the expence small.

---

### PLOUGHING IN GREEN CROPS.

**MR.** Wedge, of Westley, in Cambridgeshire, ploughed up an old grass sheep walk, lying low, and the soil very good, and took a crop of wheat. He then sowed turnips upon one part, sowing cole on the wheat stubble, which was turned in as a manure for the turnips; this crop was there the worst of the whole field. After turnips, barley in 1800, and it is an immense crop, perhaps as fine as any I ever viewed; rich enough in the blade in June to produce ten or twelve quarters an acre; and it is remarkable that where the cole injured the turnips the barley is the best. This seems to prove that the first crop came too soon upon this green manure, which was not converted into the food of plants time enough to be of service to the turnips. *See Mr. Rodwell's case in p. 258.*

Mr. Saffery, of Downham, saw an experiment on a clay soil: part of a field of buckwheat was seeded, and part ploughed in for wheat, with which crop the whole field was sowed; he examined it carefully, and could see no difference.

GRASSES.

**V**IEWED the Duke of Bedford's grasses in the experimental garden, and the plants stood thus in quantity and luxuriance of herbage:

*Achillea mille folium*

Burnet

*Trifolium medium*

*Lathyrus pratensis*

*Dactylus glomeratus*

*Avena elatior*

*Festuca pratensis*

*Alopecurus pratensis*

Pacey's ray grass

*Triticum repens*

Lucerne, had been mown, and now six inches, June 19.

The Duke laid down a field with Pacey's ray grass, except one land with the holcus lanatus, or Yorkshire white; it has all been fed with sheep, and no bents have risen on that land, the sheep preferring it sufficiently to keep it quite bare. But in his Grace's watered meadows it is as bad for hay as it is good for feeding in the other case, insomuch that he must break it up to lay down again with better plants.

*Ray Grass.*

Mr. Holmes, of Alconbury, in Hunts, who has had thirty years' experience on the strong clays of that parish, is decidedly, and from many observations, an enemy to it's use on these soils. Red clover, white, trefoil, or any thing he has sown pays better, and produces more corn when broken up.

---

## ASSES.

THE Earl of Egremont, early in 1800, established a team of six jackasses for carting, and has found them during nine or ten months extremely useful. Six of them bring a chaldron and quarter of coals twice a day in a waggon from the canal to his Lordship's house at Petworth, which shews a degree of strength not expected in them. They are gentle, docile, and perfectly handy; in the winter months they had no oats, nor any other hay than the bands of the trusses consumed by horses, but lived on furze and holly; they are hardy, and kept for a trifle. This experiment deserves much attention, for I suspect that they will be found by far the cheapest team that can be used.

## EXPERIMENTS ON THE WINTER AND SUMMER SUPPORT OF SHEEP,

*For the Year 1800.*

BY THE EDITOR.

**T**HE preceding register of the flock will be seen in the following passages of this work:

For 1789, in vol. xii. p. 221.

1790, in vol. xv. p. 300.

1791, in vol. xviii. p. 105.

1793, in vol. xxi. p. 601.

1794, in vol. xxiv. p. 23.

1795, in vol. xxvi. p. 489.

1796, in vol. xxviii. p. 258.

1797, in vol. xxxi. p. 204.

1798, in vol. xxxiii. p. 180.

1799, in vol. xxxiv. p. 414.

I began the winter account (179<sup>9</sup><sub>1790</sub>) with 400; lessened by sale to 315 the beginning of January. Provision for winter, 18 acres of turnips, 31 acres of rowen, and 11 acres of *fog*; that is (as explained on former occasions) the whole year's growth kept for winter use, in a field called *Strawberry Lay*, laid down with native grasses some years past. They consumed

VOL. XXXVII. No. 211. T

also 7 tons, 5 cwt. of hay; which may be thus stated:

	Acres.
Hay and the rowen of hay - - -	7
Rowen of other land 24 acres; let us call this one third of the crop, or - -	8
Fog - - - - -	11
Turnips - - - - -	18
	<hr/>
	44

Which land wintering 315 is at the rate of seven and a small fraction per acre, besides 178 lambs.

<i>Summer Pasture.</i>	Acres.
<i>Lawn.</i> —Old grass - - -	16
<i>Adam's.</i> —Chicory, worn out - -	11
<i>Woodfield.</i> —Meadow fescue and oat grass	8
<i>Little Pakes.</i> —Oat grass and cock's foot	5
<i>Grubbed Wood.</i> —Meadow fescue - -	3
<i>Little Ardera.</i> —Meadow fescue, &c. -	3
<i>Little Stains.</i> —Meadow fescue, &c. -	4½
<i>Experiment.</i> —Crested dog's tail - -	3
<i>Ardera.</i> —Yorkshire white, burnet, &c.	9
<i>Grove.</i> —Meadow fescue - - -	1
<i>Kiln Lay.</i> —Old grass - - -	2½
<i>Arbour.</i> —Ditto - - -	7
	<hr/>
	73

Reckoning two lambs as one sheep, the num-



ber summered were 379, or five and a small fraction per acre.

Summer food	-	73 acres
Winter ditto	- -	44

—117

For the whole year—315 kept twenty weeks, and 379 thirty-two weeks, are in the proportion of 354 for fifty-two weeks; which number on 117 acres make three an acre for the year.

In the last year's register I mentioned the heavy losses I had sustained by a distemper called here *the rubbers*, which I then described. I had reflected a good deal on this complaint, and endeavoured in vain to ascertain the cause. I found it had been more prevalent amongst the capital and high-fed flocks than amongst such as were much more hardily kept; but I gained a clue which, with the attention of medical men, may throw great light on it. Having ordered a sheep to be killed, because attacked by this malady, I had her skull opened, and, to my great surprise, found *in* the brain a whitish-yellow worm, or grub, about an inch and half in length, and as thick as a common goose quill. Afterwards I examined two others, and with a similar animal in the same place.

This circumstance deserves much attention from the gentlemen of the veterinary science. As the lodgment is made within the brain, there

can be little or no hope of any cure ; but if the generation of this animal can be discovered, and the road by which he arrives at such a nidus, prevention may be attainable, though not a cure. During the course of the year my losses amounted to twenty-eight, which were a much smaller proportion than that of the year preceding.

This year I used South-Down rams only, and continue well convinced that the estimate I made in the last register of the three breeds on this farm (the South Down, New Leicester, and Spanish), is entirely accurate. A. Y.

*Bradfield Hall, July 8, 1801.*

---

## ON SHEEP SHEARING.

BY MR. PRICE, OF APPLEDORE.

**S**HEEP SHEARING in Romney Marsh commences about the 21st of June, and ends about the middle of July. Those that shear first think they escape the effects of the fly, and those that shear late apprehend they gain half a pound weight in every fleece, by the increased perspiration of the sheep, more than those that shear a fortnight sooner. Shearing the sheep early, that is before the hot weather comes on, the wool has

not the condition that it has afterwards, but the hot weather which generally happens then gives the lookers (shepherds) oftentimes a good deal of trouble in detecting the fly. It happens well that graziers should have different sentiments in sheep shearing, for some must begin first, otherwise there would not be shearers enough.

When the period of sheep shearing commences the looker, previous to the shearers coming, gets his large pound (pen) nearly full; now the quantity of shearers is from four to twelve, in general according to the quantity of sheep they have to be shorn. The graziers never wish to have more than three or four days' shearing, some have two. These shearers differ much as to the quantity and method of doing it; they never begin early, for if they shear eight or ten hours they are satisfied. The quantity a man shears, an indifferent hand, about sixty, a good one a hundred, in these hours; a good shearer will shear ten an hour, a bad one seven. It is astonishing to see a good shearer handle a sheep; he studies it's ease, and the sheep seems delighted in it's situation, to one that is under a less expert hand. I confess I am always highly pleased to see a good shearer take off a sheep's fleece, the sheep and shears are handled with such dexterity. The sheep are let into a small pound, about thirty or forty at a time; and when taken out all to

three, more are put in ; the leaving three is because if one or two were left, they would be liable to jump out. A boy keeps the gate with small leaden tellers, about the size of a small sixpence, marked with the owner's name, or the date of the year. When a shearer takes a sheep out of the pound, the boy gives him a teller, and as many of these he has at last, so many sheep he is paid for. Here is work that displays ingenuity and emulation. At this employ every man aims at his reputation and profit, not for the best manner of doing it, but the quickest dispatch. I disapprove of these proceedings ; I would sooner have less done, and give more, than have sheep pulled about in the manner they are sometimes, and not close shorn neither. They are apt to have cuts with the shears two to four inches long ; the boy applies tar to these places, which keeps the fly off: some use an ointment. The master is commonly at the shearing place, whose office is that of pitchmarking [the sheep after they are shorn ; and when one field is done, they are returned, and others are ready to take their place. The common method is taking the sheep out of the pound by one of his hinder legs, and drawing it backwards to the shearing place, which is adjacent ; the hand when hold of the leg should be kept low down ; when at the place, turning them on their backs. The method of

thus taking them out of the pound appears to a stranger very awkward ; but when he considers the propriety of it, that disappears : if a sheep is handled hard (fed on rich pastures) at this season of the year, it will soon mortify and die ; this is often the case, and the pounds are upon some land obliged to be lined with woollen cloth, otherwise a great many would die. Some shearers take them bodily out, others put one hand before and one behind, and so walk them to the place ; but the usual method is taking them by the hind leg, there is less danger of bruising them. The price of shearing is 18d. a score, with a dinner, or 1d. a sheep and find himself. A good winder will wind 400 fleeces a day, he has the same money per hundred as the shearers have for a score. The method of shearing them is, viz. the left side of the sheep to the shearer's left leg, the left foot at the root of the sheep's tail, and the left knee at the sheep's left shoulder ; begin with the shears at the crown of the sheep's head, and cut straight down to the sheep's loins ; then come back to the shoulder, and shear the off side all round to the middle of the belly ; then the off hinder leg ; then, taking the tail in your left hand, shear round the rump to the near huck of the sheep's hind leg ; then, taking the two fore feet in your left hand, and raising the sheep, set the shears in at the breast, and shear the re-

maining part of the belly round to the near stifle; then, kneeling down on your right knee, lay the sheep's neck over the shearers's left thigh, shear down the last side, and then finish.

---

## REMARKS UPON SHEEP SHEARING AT ROMNEY MARSH.

BY MR. CULLEY.

1st. **W**HAT is said by Mr. Price respecting the benefit arising to the wool from being late clipped or shorn from the sheep I perfectly agree to; and it is consonant with the opinions of the Lincolnshire graziers and breeders of sheep, who perhaps have paid more attention to this subject, and better understand when wool is fit to shear, than any other set of people in this island; and there is no doubt but the later you put the shearing in July, the riper, heavier, and better the wool is, only it requires very great attention in the shepherds to keep them free from the fly and maggots. Another evil attending late clipping or shearing is, the danger of small flies *beating* the sheep in those parts where the shearers have in the least injured the skin or pelt of the sheep with the points of the shears, supposing not

clipped out, but only scratched with the points of the shears. By *beating* is meant, when the flies fix or fasten on those parts where the shears have made a scratch.

But, 2dly, In regard to shearing ten, or even seven sheep in an hour, I think extremely absurd and improper; because I know from long experience that it is impossible for the best clippers to do seven, let alone ten, in the hour, so well as they ought to be done. Indeed Mr. Price disapproves of it himself, by saying, "he would rather have less done, if it cost more." He adds, "they are apt to have cuts with the shears two to four inches long;" and no wonder, because, as I have said before, it is not in the power of any man to do such number well. Forty years since, in the county of Durham, we were guilty of the same absurdity; and I have known some particular men clip 60 or 70 of those large sheep in a day, but horridly they were done; large pieces of skin cut out in several parts, especially about the belly. The consequence was that the sheep were punished and pestered with flies all through the summer; some never recovered it, and all those much cut suffered very much. I have known several sheep die immediately after shearing, probably owing to having their legs tied at the period I refer to; which, with hurrying and tossing the poor ani-

mal about, brought on a cholic or cramp, which put a period to it's existence in a moment. At that time, in a flock of 200 sheep, we seldom escaped without the loss of one or two sheep in a season; and at this time, in the clipping of 3000 annually and upwards, I believe we have not had one die these seven years. But, instead of tying their legs, and trying who could clip the most per hour or day, we very wisely began to try who could clip the best; and, from that change of system, instead of clipping 50 per day, we think it a very fair day's work to clip 25 sheep upon an average. I believe, where people have them clipped by the great, that is paid according to quantity done, that the shearers will do 30 or upwards per day: but we do all our's by the day, and not by quantity; and I confess that I have great pleasure in seeing five or six good clippers taking off the fleeces without being in any unnecessary hurry, and without scarcely wounding a sheep in a day. We have no tellers, but the attendant takes care that each clipper gives his sheep when done his peculiar mark with red or blue, so that the master can then know, if he see a sheep bady done, whose it was. This we consider as a very useful stimulus to induce them to excel.

3dly. I do not disapprove of catching the sheep by the hind leg above the hough, but not by any



means to draw them backwards from the pen to the clipping place ; on the contrary, as soon as the catcher has caught the sheep by the hough, he gives it a pull or draw backwards until he can with his left hand reach the sheep's throat, then, with the right hand behind it's tail, he conveys it with ease and safety to the place he wants it to.

Our price for clipping used to be one shilling per dozen, and a gill of ale at ten o'clock, and another at four in the afternoon. I suppose a man will have 1s. 6d. per dozen now, from the advance in wages ; but we clip all our's with our own men, mostly the shepherds, many of whom now do them most admirably : and we have in general prevailed upon them to clip with either hand ; which is not only the easiest for the clipper, but enables him to do his work in the neatest and most complete manner. Thirty years ago it was the general practice in this county, and some old fashioned, bigoted people still do it, to shear the sheep thus : the clipper first opened the belly, and then, after tying all the four legs, sat down upon a sack filled with straw, the sheep lying between his legs ; when, in the most awkward manner, he slashed and tore the fleece off, beginning at the neck and going down the left side first, and finishing at the right. Instead of clipping around, as at present, they then clipped them mostly longways.

The present method is to begin at the back part of the head, to give room for the shears to make their way down the right side of the neck, to the open of the breast. The man then sits down upon his right knee, and lays the head of the sheep over his left knee, *being bent*, and beginning at the breast, clips the under side of the throat upwards to the left cheek; then takes off the back of the neck, and all the way down to below the left shoulder. He then changes to the contrary side, and makes his way down to the open of the right flank. This done, he returns to the breast, and takes off the belly; after which it matters not which side he takes off, because, being able to clip with either hand, he meets his shear points exactly at the middle of the back all the way until he arrive at the thighs or legs. Then he lies the sheep down on his left side, and, putting his right foot over the sheep's neck, and the other forward to the undermost hind leg, clears the right side; and then turning it over, finishes the whole.

# CONDITION OF THE POOR AT DIFFERENT PERIODS.

A PERSON is now living in the vicinity of Bury, in Suffolk, who, when he laboured at 10d. a day, or 5s. a week, could purchase for that 5s. a bushel of wheat, a bushel of malt, a pound of butter, a pound of cheese, and one pennyworth of tobacco!!!

Price in 1801.		£. s. d.		£. s. d.
Wheat	-	0 16 0	His labour	- 0 9 0
Malt	-	0 9 0	Suppose from the	
Butter	-	0 1 0	parish rates	- 0 6 0
Cheese	-	0 0 4		
Tobacco	-	0 0 1		
		<hr/>		<hr/>
		1 6 5		0 15 0
		<hr/>		<hr/>

Worse in the latter period than in the former by 10s. 7d. or more than the amount of his present week's pay. The comparison fair as far as it goes, because the extreme in both cases; the very lowest in one, and the very highest in the other.

## ERRATA IN No. 210.

- Page 175, line 3, for *Bircbwold* read *Buckwald*.  
 — 176, — 11, for *secured* read *scoured*.  
 — 179, — 1, 3, 12, 17, for *Husener*, read *Hufener*.  
 — 179, — 22, for *liespsund*, read *liespfund*.  
 — 179, — 22, for *fasben*, read *fathom*.  
 — 180, — 18, for *fasben*, read *fathom*.  
 — 180, — 3, for *busener*, read *bufener*.  
 — 182, — 26, for *task and business*, read *take*. And lastly,  
 — 184, — 10, for *second*, read *secondly*.  
 — 184, — 13, for *tbird*, read *tbirdly*.  
 — 184, — 23, for *Bregenton*, read *Bregentved*.  
 — 188, — 13, for *Bircbwold*, read *Buckwald*.

In the plate of the ground plot of a boor house, the figures 26 feet should be put cross ways, for the breadth. The length of the lobby is not set down in the original, but from the scale appears to be about fifty feet.

In the plate of the machines, for *Cart bills*, read *Ant bills*.

N. B. In page 177, Hollander might be translated *dairy man*. Holländercy is a common expression for a dairy farm. The dairy men were probably at first all Dutchmen, and *Hollander* may be here meant for a Dutchman, or merely a dairy man.

AVERAGE PRICES OF CORN FOR  
JUNE, 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	14	9	5	9	8	3	6	0
Middlesex,	16	0	6	2	4	7	6	6
Surry,	16	11	6	7	4	8	6	11
Hertford,	14	9	6	5	4	6	7	8
Bedford,	14	5	8	7	4	6	7	2
Huntingdon,	14	2	8	0	3	7	5	9
Northampton,	13	3	8	3	3	11	7	1
Rutland,	13	5	9	8	3	11	8	1
Leicester,	14	7	8	5	4	0	8	6
Nottingham,	14	11	9	6	5	0	8	8
Derby,	15	5	8	1	4	7	8	11
Stafford,	17	7	10	3	6	1	9	8
Salop,	17	9	10	10	5	6		
Hereford,	18	5	10	0	5	5	10	1
Worcester,	18	9	10	6	5	5	9	9
Warwick,	18	7	11	6	5	5	9	5
Wilts,	16	9	8	6	4	7	8	9
Bucks,	15	11	6	9	4	9	6	9
Oxford,	16	7	8	11	4	10	7	9
Berks,	14	10	8	8	4	9	7	7
Brecon,	18	9	13	9	5	0		
Montgomery,	16	5	8	0	4	10		
Radnor,	17	10	11	5	4	10		

MARITIME COUNTIES.

Essex,	14	4	6	6	3	11	6	1
Kent,	14	11	5	5	4	0	6	3
Sussex,	16	6	7	6	4	8		
Suffolk,	14	8	5	1	4	1	5	7
Cambridge,	12	6	5	11	3	6	5	6
Norfolk,	12	7	4	8	4	0	5	10
Lincoln,	12	11	8	3	3	8	9	8
York,	14	1	7	2	4	3	7	3
Durham,	16	6			5	2	9	0

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	D.	s.	D.	s.	D.	s.	D.
Northumberland,	14	3	7	8	4	11	—	—
Cumberland,	16	10	10	1	6	7	—	—
Westmoreland,	18	9	10	8	6	4	—	—
Lancaster,	16	2	7	3	5	8	8	7
Chester,	15	5	8	3	5	1	12	4
Flint,	16	10	10	2	—	—	—	—
Denbigh,	15	10	11	1	4	6	10	5
Anglesea,	—	—	9	8	—	—	—	—
Carnarvon,	15	5	8	11	5	4	—	—
Merioneth,	16	6	10	7	5	6	—	—
Cardigan,	14	6	10	6	—	—	—	—
Pembroke,	14	10	10	2	—	—	—	—
Carmarthen,	15	10	12	11	5	6	—	—
Glamorgan,	18	10	13	10	6	4	—	—
Gloucester,	19	1	9	7	4	6	8	10
Somerset,	18	2	8	8	4	0	10	6
Monmouth,	19	3	12	8	—	—	—	—
Devon,	16	1	9	8	3	11	—	—
Cornwall,	14	6	8	10	3	9	—	—
Dorset,	16	7	9	6	4	11	9	5
Hants,	17	2	7	9	4	6	8	3
General average,	16	1	9	0	4	7	7	10
March	19	3	11	0	5	9	10	0
April	18	11	11	0	5	8	9	6
May	16	3	9	7	4	11	8	3

---

# ANNALS OF AGRICULTURE.

---

## AN ESSAY ON THE FOOD OF PLANTS AND THE RENOVATION OF SOILS.

BY JOHN INGENHOUSZ,

*Body Physician to their Imperial and Royal Majesties, F. R. S.*

**T**HE surest way of finding out the real nourishment of organized bodies seems to be, to inquire what is the substance, without which they inevitably perish, and which alone is sufficient to continue their life. All animals require two ingredients for the continuation of their life; viz. atmospheric air and moist food, derived either from animal or vegetable substances, which food being received into the stomach, or some reservoir destined for that purpose, and being gradually digested and changed into different substances in the different organs, is applied to the whole economy of the animal body. Vegetables being deprived of progressive motion, by which

VOL. XXXVII. No. 212. U

means the most part of animals go in search of food, must find in the narrow compass of space they occupy every thing necessary for their subsistence. As they are in contact with two substances only, the earth and the atmospheric air, their nourishment must exist in either of them or in both. The earth is necessary to the plants, as the only means to fix them stedfastly to the spot, by spreading through it their roots; but as earth contains generally moisture, salts, air, &c. nature has taken advantage from this circumstance, so that the filaments of the roots pump from the soil all that is offered to their suckers and can be absorbed by them; but as some plants may live and thrive without being in contact with any earth, we ought to take it for granted, that the soil, or what exists in the soil, is not the only food of plants. Water is necessary to all organized beings, as without it no circulation of juices could be carried on; but from this necessity it can only be deduced that water is a vehicle of the food, and by no means that it is the true nourishment of animals or vegetables—the less so, as it is an incontrovertible fact, that several plants can live without being in contact with water. Thus the agave, cactus, aloe, cacalia, &c. live in the most dry rocks in the hottest climates, where it does not rain sometimes in the space of several months, and where



the burning sun pierces all other plants, and even deprives the trees of all their leaves; and, what is extraordinary, the most part of such plants are full of juices. The nocturnal dew cannot give sufficient nourishment to such plants, as all other plants would also maintain themselves with it. But to be certain that those plants do not subsist by dew, we ought to consider only that some plants of that species may be kept alive in the hothouses, either in pots, without being watered, or by hanging them up from the ceiling.

Now, as by what I have said here, it seems to be probable, that neither water nor soil is, or contains all the true nourishment of vegetables, it must be concluded, that plants must find it in the atmospheric air, for this is the only ingredient without which all vegetables perish. A plant shut up in vacuo soon dies; and it dies in all sorts of aerial fluids which are incapable of supporting animal life: such as fixed air, inflammable air, phlogisticated air, or azote, &c. It is true, Dr. Priestley and Mr. Scheele have propagated a doctrine diametrically opposite to what I have here advanced, by saying that plants thrive wonderfully in putrid air, and perish in pure or dephlogisticated air. This doctrine, though generally adopted, and very ingeniously applied by Sir John Pringle and others to illus-

trate the mutual reference established by the author of nature, between the vegetable kingdom and the animal creation, is refuted by my experiments, by which I think I have proved that plants shut up in vital air live so much the longer as this air is superior in purity to atmospheric air. I have explained the manner of making these experiments with success; and I have indicated the reason why, of two plants, the one shut up with common air, the other with the same quantity of vital air (both kept in the dark), the plant placed in common air can only be kept alive during a certain very limited time, whereas the plant shut up in vital air may be kept alive much longer, even as long as there is vital air enough remaining to cover the whole plant.\*

From these and many other considerations, I have deduced, that from the two organized kingdoms, the animal and the vegetable, the animal derives it's nourishment from the vegetable; but that the vegetable creation is independent of the animal world, provides for itself, and derives it's subsistence chiefly from the atmosphere.†

When I engaged in the experiments on vege-

\* See *Experiences sur les Vegetaux*, tom. II. sect. i, ii, iii, iv, and lvi.

† See *Experiences sur les Vegetaux*, tom. II. p. 190, 490.

tables, which I have published, 1779, in English, and, in 1780, more fully in French, Dr. Priestley had already observed that vegetables possessed a power of correcting bad air, which, however, was denied by Mr. Scheele, in Sweden, who found that plants, instead of correcting bad air, corrupted good air. This contradiction struck Dr. Priestley so much that he employed the summer of 1778 in repeating his former experiments; and after the most accurate researches he concluded, that though there seems to be such a power in plants, yet that very often they have quite a contrary effect, as Mr. Scheele found; but that he did not know what the reason of this uncertain effect of plants on air was\*. Dr. Priestley, in 1778, found, by accident, that by exposing well water a long while to the sun it produced a filmy greenish sediment, which produced pure air in the sunshine: by examining this matter with a microscope, he found it destitute of organization, and pronounced it to be neither an animal nor a vegetable substance, but a substance *sui generis*, to which he gave the name of green matter. Mr. Berthollet found also, that by ex-

\* See Dr. Priestley's work on *Airs*, vol. IV. published 1779, of which the quotations may be found in my book, *Experiments on Vegetables*, published 1779, p. 23, 32, and in the avant propos and preface of my *Experiences sur les Vegetaux*, Vol. I. second edition, printed at Paris.

posing dephlogisticated marine acid to the sun, vital air was produced; and Mr. Scheele, in Sweden, found, that the same air was also produced from nitrous acid exposed to the light of the sun.

I was fortunate enough to discover the true reason why plants did sometimes corrupt bad air, and sometimes made it worse, which reason was never so much as even suspected either by Dr. Priestley or by Scheele; and indeed if either of them had had the least suspicion of it, their known eagerness for fame would not have allowed them to keep the discovery from the public eye, and Dr. Priestley would not have gone much further than Mr. Scheele did; viz. to acknowledge openly (even in his book printed 1779); that he had been mistaken, and that he was entirely ignorant of the reason why vegetables are so inconstant in their effects on the air in contact with them\*.

I discovered, in the summer 1779, that all vegetables are incessantly occupied in decomposing the air in contact with them, changing a great portion of it into fixed air, now called carbonic acid, which, being specifically heavier than atmospheric air, tends naturally to fall downwards, and being miscible with moisture, salts,

\* See Experiments on Vegetables, p. 28, and following.

and different sorts of earthy substances, is apt to combine with them. I found that the roots, flowers, and fruits are incessantly employed in this kind of decomposition, even in the middle of the sunshine; but that the leaves and green stalks alone cease to perform this operation during the time the sun, or an unshaded clear day light shines upon them, during which time they throw out a considerable quantity of the finest vital air, and moreover make the air in contact with them purer, or more approaching to the nature of vital air\*.

I did not doubt that this continual decomposition of atmospheric air must have a general utility for the subsistence of the vegetables themselves, and that they derived principally their true food from this operation, by changing this decomposed air into various juices, salts, mucilage, oils, &c. much the same as in graminivorous animals the simple grass changes, in the various organs, into the numerous and very heterogeneous fluids and solids. It would cer-

\* I have published facts which prove that vital air, produced by vigorous plants in the sunshine, is of the greatest purity in itself, and that the air thrown out by them, in the shade or in the dark, is in itself, that is to say, being free from other air, the most active poison in destroying animal life yet known.—(*See my work on Vegetables, French edition, p. 182, 185.*)

tainly be a very difficult, if not impossible task, to give a clear and satisfactory theory, by which these various changes, compositions, decompositions, new combinations, &c. performed upon one single species of food, such as grass, may be explained. The same incomprehensible transformations are going on in vegetables. If once it was satisfactorily proved, that plants can subsist in what they find in atmospheric air without any other substance, we ought to content ourselves with the fact alone; for it would be in vain to attempt to penetrate the mystery of all the changes this air undergoes in the organs of these living beings; no more need we anxiously to investigate by what means, in a man who lives only on rice and water, all the various transmutations of this simple food are performed. This mystery is above the reach of our very limited understandings; and truly, who could pretend to understand how a part of this rice forms in some places hard bones, in others soft fat, and in one single place a liquid, of which a single drop poured into the womb of a woman excites in that organ the most wonderful of all operations—the production of an embryo which is to bear the strongest mark of resemblance to the man whose sperm gave rise to this progeny.

The new light which chemistry has received

in our age affords us the means of understanding many phenomena which we were either ignorant of, or which nobody understood any thing of before. The new discoveries in the nature of water, air, salts, &c. open the door to an infinite number and variety of new discoveries. The identity of the same principle of all acids called oxygen, which the French chemists have established, throws new light on the difference which exists in the various acids already known, and on the changes which these acids undergo. Thus the same acidifying principle, attaching itself to a different basis, *le radical*\*, becomes either nitrous, vitriolic, marine, or any other acid: with carbon it becomes fixed air, or carbonic acid; with sulphur it becomes vitriolic, or sulphuric acid; with phosphorus it becomes phosphoric acid; with azote it becomes nitrous acid, &c. (This last a capital discovery by Mr. Cavendish.) It may thus be reasonably supposed that some acids taken into our body may lose in the various operations of our organs their former radical, and combine with a new one, and by this combination entirely change their nature. Without such like changes taking place in our organs, how could we account for the generation of the great quantity of phosphoric acid existing

\* See Fourcroy's Works.

almost every where in our bodies (which acid has already got the name, by some eminent chemists, of *animal acid*), principally in our bones? whereas we find no where the marine acid, though of all others we take in the greatest quantity of it. We find in several liquids, it's basis, the fossil alkali; as in bile, semen, urine, &c.; but we find nothing of it's acid, nor even the marine salt undecomposed, except in the serum of the blood and the chylus, in which this salt has not yet undergone the elaboration of the vital organs. It seems, therefore, as if all the acids, the marine, the vegetable, the carbonic, &c. were in our organs transformed, for the greatest part, into the animal or phosphoric acid. It seems at least probable, that without supposing this change of acids to take place in our bodies, we could not account for the great abundance of phosphoric acid existing in our bodies, for though it really exists in some of our foods, yet the quantity of it is but small.

If plants imbibe fixed air, or carbonic acid, it is not more difficult to believe that this substance may be transformed, elaborated, or modified into various other substances and salts in the organs of the plants, than it is difficult to believe that the above-mentioned changes take place in the human body. Who could believe, without demonstrative proof, that the aerial fluid,



the carbonic acid, constitutes about  $\frac{1}{100}$  of limestone; and that this stone having lost it's hardness, by being deprived of this aerial fluid, recovers it's former consistency by recovering this fluid?\*

As the carbonic acid is composed of the acidifying principle, the oxygen, and the carbon or coal, plants may derive from these two principles some of the most essential substances we find in them; their acids, their oils, their mucilage, &c. These ingredients, together with the azote absorbed also with the atmospheric air, being elaborated in their organs, variously modified and combined, in a manner somewhat analogous to the wonderful, though to the human understanding incomprehensible, elaborations and combinations which we observe in the bodies of animals.

Mr. Hassenfratz† delivered in the month of June, 1792, to the Royal Academy of Paris, three papers on the nourishment of plants, which met with very general approbation. The principal part of the doctrine contained in these three

\* According to M. Lavoisier, the founder of the new chemistry, the carbonic acid is composed of  $\frac{7}{100}$  of oxygen, which is the basis of vital air, and  $\frac{2}{100}$  of carbonic substance, called carbon; water is composed of  $\frac{8}{100}$  of oxygen, and  $\frac{1}{100}$  of hydrogen; common air is composed of  $\frac{2}{100}$  of oxygen, or vital air, and  $\frac{7}{100}$  of nitrogen, or azote; oxygen air is composed of oxygen, or the acidifying principle, and the matter of fire and light.

† See *Annales de Chimie*, of 1792.

memoirs, viz. that *coal* or carbon constitutes the principal nutritive substance of plants, is much admired and adopted by the celebrated Mr. Kirwan, in his Dissertation on Manures, published in the fifth volume of the Irish Philosophical Transactions.

In the first of these papers, Mr. Hassenfratz says, that water and air are not alone sufficient to nourish plants, but that the developement or growth of these beings is owing to the carbon, which, being originally lodged in the seed, is expended in this business.

In the second memoir he attempts to prove that the carbonic acid or fixed air is not a nutritive ingredient of plants, and that the act of vegetation does not decompose the carbonic acid; but, he says, on the contrary this carbonic acid is, as Dr. Ingenhousz has discovered, formed by plants in the dark, and drawn from the plants and the oxygen of the water decomposed by vegetables. Mr. Kirwan differs in this respect from Mr. Hassenfratz, and thinks that the carbonic acid is decomposed by the act of vegetation.

In the third memoir he asserts, that the carbon, the true nourishment of plants, is derived by the roots from the soil, where it is ready found in a state of sufficient solution or suspension to be absorbed by the suckers and carried through the whole plant. He thinks that the vigour of

the plants depends chiefly upon the quantity of carbon with which the soil is impregnated; and he gives the name of carbon to the brown sediment of the infusion of dung which remains after the water is evaporated.

The doctrine contained in these memoirs, as well as the important experiments to which they relate, require, I think, farther investigation before it can be proved or clearly understood. Let me be allowed to throw out some hints and considerations which may, perhaps, show the way towards the true mystery of the manner which nature employs to feed the plants. All seeds contain a certain quantity of food, by which the plant may be kept alive in the beginning of it's growth; some have a considerable portion of mucilaginous matter, such as seed of quince; some have, besides this mucilage, a very thick cover or pulp by which the seed is surrounded, such as the seed of grapes, apples, pears, melons, cucumbers; which substances serve also as food for animals. All those substances by which many grains are thickly covered yield a great quantity of fixed air, or carbonic acid, when the seed lodged in them begins to vegetate; but this substance being exhausted at the close of their fermentation and putrefaction, the embryo plants must be capable of providing for themselves. A new-born child may also live a few days without food, being nourished by some nutritious

matter which it brings with it when born, and which it had imbibed by the mouth when in the womb, and part of which nourishment was prepared in the pectoral gland of the child; as it is well known that all children, male as well as female, come into the world with a portion of true milk elaborated in their breasts. Thus also the yolk of the egg is drawn into the stomach of the chick when ready to break it's prison, by means of which yolk it is nourished till it has acquired strength enough to go in search of food. The mothers of animals endowed with breasts feed, during a certain time, their offspring by their milk. Many animals, such as birds of different kinds, wander about in search of food to be carried to their young. Very few animals find on the spot where they exist every thing they want. But all plants are destined by nature to remain on the same spot, and therefore must possess such faculties which prepare into food some of the substances in contact with them, as soon as they have consumed the small store of food they are provided with before they vegetate.

As the very first decomposition of the pulp surrounding the seeds is accompanied with the production of carbonic acid; and the first operation of the embryo, or beginning plant, is to decompose the air in contact with it, by changing the oxygenous part of it into carbonic acid, of which it probably absorbs, in the dark and shade,

the oxygen, and, in the sunshine, the carbon throwing out at that time the oxygen alone and keeping the carbon to itself as nourishment; as all these different operations, I say, have one general effect, viz. the decomposing the air in contact with plants, it seems more than probable that vegetables derive their principal food from this decomposition, and the production of fixed air, or carbonic acid,

This supposition will acquire a degree of greater probability by considering, that all air which cannot be easily changed or decomposed into fixed air, as possessing no oxygen at all, are true poisons to plants, such as inflammable air\*, putrid air, and azote, contrary to Dr. Priestley's and Mr. Scheele's doctrine; and that vital air itself, or an air approaching to it's nature, maintains a plant remarkably well in it's full vigour; and that carbonic acid concentrated, or without a great proportion of respirable air, kills also plants, as this air and all other airs, poisonous to vegetable life, are also destructive of animal life; which doctrine I produced the first, in

\* Dr. Ingenhousz should have proved this by experiments counter to my own and others. I have fed plants with inflammable air till they became, comparatively speaking, giants amongst dwarfs. How then does it act as a poison? If nothing else be given it may, as the most nutritious food may suffocate animals.

A. Y.

contradiction to that of the two celebrated philosophers just mentioned\*.

When I discovered, in 1779, that all vegetables decompose the common air by night and change a part of it into fixed air†, and when I drew from this and some other facts the conclusion, that the plants absorb this fixed air and turn it into their nourishment, the new doctrine of chemistry was not yet published, and being ignorant of all the beauties of this system, I was unable to reduce these facts to a proper theory; but since we have been instructed in the analysis of water and air, it is become much easier to explain the phenomena of vegetation. As it is now admitted, that fixed air, or carbonic acid, is composed of oxygen, deprived of it's caloric, or matter of heat, and of carbon, it is not difficult to understand how plants provide or prepare their own nourishment by producing carbonic acid, supposing it to be demonstrated that carbon is the principal nourishment of plants.

From this doctrine it would naturally be inferred, that plants must grow the most rapidly at such time when they prepare the greatest quantity of this nourishment, which is when they are in the dark; and this is just what really

\* See *Experiences sur les Vegetaux*, tom II. sect. lvi.

† See *Experiences sur les Vegetaux*, tom. I. p. 90 and 92.

happens, as all plants grow with much more rapidity in a dark place than in the light, as Mr. Du Hamel and Mr. Bonnet, of Geneva, found; they call this quick growing *etiolement*. Plants in general grow less towards the middle of the day than at any other time; many do not advance at all when the sun is near the meridian; some even become manifestly shorter towards that time. (See my work, *Exp. et Obs. Nouvelles*, vol. II. p. 206.)

I discovered that the roots of plants, even when exposed to the sunshine, produce carbonic acid, but that the leaves and green stalks produce this acid only in the dark; and that flowers and fruits, with a few exceptions among the last, produce at all times, even at the roots, carbonic acid. Thus there is no time lost, some parts, or the whole plant, being constantly employed in this business of preparing carbonic acid.

Though Mr. Hassenfratz seems to believe, that plants do not derive the carbon (in his opinion their true nourishment) from the carbonic acid, but find it ready made in the dung; I think it more probable that plants derive it chiefly from the carbonic acid, which is a substance very easily decomposable in it's two ingredients, viz. oxygen and carbon. All manures, principally dung, produce a great quan-

VOL. XXXVII. No. 212. X

tity of carbonic acid either by itself, or by decomposing the air in contact with it.

But here seems to start up a difficulty, how a plant or manure can draw from the atmospheric air carbonic acid, as common air contains, according to the new system, only  $\frac{1}{100}$  of it; and, according to M. Lavoisier, nothing at all. Though according to those principles it could not be accounted for theoretically, I think we have at hand facts enough, from which it seems evident, that the common air can by itself furnish all the ingredients for the composition of carbonic acid, as we shall see by and by. Do these facts argue a defect in the new system? Let a better judge than I am decide this.

We are as yet very far from understanding the various productions, which in this world are exposed to our senses as offsprings from the infinite combinations, decompositions, chemical affinities or attractions, &c. every where in action on the surface and in the bowels of the earth, in the atmosphere, the waters of the sea, and all others in the organized bodies of animals, vegetables, &c. The new system of chemistry, indeed, furnishes a vast deal of new light, but is yet by no means sufficient to penetrate into the deep mysteries of organized beings; for instance, the propagation of animals and vegetables has acquired from it but very little light, if any at



all. The analysis of the spermatic humour, very easily to be made, affords not the least idea of the nature of it's wonderful prolific power. After this digression, I return to the subject of the production of carbonic acid.

Calcareous stones and alkaline salt, deprived of all their carbonic acid by fire, regain it by the sole exposure to the open air. If this production can happen by such simple means, can we be astonished that organized bodies draw it from the same source, the atmosphere; which to me seems to be the general magazine or store of all the substances which enter into the composition of all organized bodies of the animal and vegetable kingdom, and even of many others of the mineral kingdom.

Mr. Du Hamel found, that a branch of a vine, or any other tree, conducted within a hot-house, it's root remaining out of it's boundaries, will there shoot forth vigorous leaves, new buds, flowers, and produce fruit, when all the other branches remaining exposed to the open air shew no signs of life, being, with the roots, benumbed by the cold, and probably destitute of any motion or circulation of their juices. If the growth of vegetables depended on the absorption of carbon by their roots, the branch drawn into a hot-house could not thrive at all as long as the root

and stem are benumbed by cold weather\*. But this branch being in contact with no substance but air, heat, and light, must derive from the surrounding air alone all it's wants to perform all the operations necessary to it's growth and propagation. By watching all it's phenomena, as I did, it will be found decomposing the air in contact with it, but in a very different way by day and by night; and that it performs these transmutations of air chiefly within it's organs, is the more probable, because all plants absorb the air in contact with them, with all it's contents†, and throw it out in a given time much altered from what it was at the moment it was drawn in. The period of time required by a plant to renew all the air it has absorbed I found to be less than half an hour by day and by night. (See my work on *Vegetables*, vol. II. sect. xxii, xxiii, xxx.)

This last assertion, which I have demonstrated by facts, will perhaps be looked upon by critical minds as somewhat paradoxical, as it seems dif-

\* As the juices of the deep-seated roots can never be congealed by frost, the cold never reaching so far, and as, therefore, the frost cannot congeal the juices of such a vine but as far as it's trunk is exposed to the open air and a little way under the ground, I think this fact may be explained in a clearer way by the other theory, which the reader will find hereafter.

† I prove this in various places of the 2d. vol. (French edition) of my work on *Vegetables*.

difficult to conceive, that the same organized body can, at the same time, inhale and evaporate from the same surface the same fluid; but this double phenomena being continually performed in all parts of living animals, the difficulty of understanding it vanishes of course. Though the most part of annual plants which afford good nourishment for men, such as wheat, rye, maize, will grow in poor soils, yet they do not become thriving in a luxuriant way but in what is called rich or well-manured soil. Those plants having a quick growth, when assisted by heat and the sun's light, come very soon to their term, or to the act of propagating their species, or of producing seed, which being come to perfection, the vital power of the plant is exhausted, and it dies. These plants being of a tender structure, and generally not spreading their roots deep in the ground, require the nicest attention in preparing the soil, so that the roots may find the least resistance in spreading, and may find as much nourishment ready prepared for being absorbed by the roots as the plants want to become vigorous, and no more; as it is well known that too much manure, as well as too little, will prevent the plants from thriving. By want of manure the plant may be considered as starved, and by too much as choaked with food. This may perhaps be considered as somewhat analagous to a chick which will lay no eggs, or

very few, by feeding it too little or too much ; giving it daily, for instance, three or four ounces of good grain, it may lay every day an egg, weighing about two ounces ; but by cramming it with eight ounces of grain, it will lay no eggs at all, or very few (I have forgot this accurate proportion). I believe (by the way) that in feeding animals either destined for food or for labour, the quantity, quality, and preparation of food necessary to obtain the end proposed is too little attended to, and that much food might be saved if this article were to become the object of an attentive observer. It is very true that some animals take in much more nourishment than they want, such as horses, in whose excrements are often found oats that are so far from having been digested, that they have even not lost their power of vegetation. It is very probable that a horse may be kept in good health and vigour by giving it mashed, ground, or boiled corn in a moderate quantity; malted grain would be the best, as Lord Dundonald thinks. Brown or rye bread is often given to horses in the Low Countries on the road ; the horses like it very much, and become remarkably lively after it ; the same effect is obtained by beer and milk, which they also give them on the road. They find a remarkable benefit in the Low Countries by feeding the cows in the stable with boiled turnips, potatoes, and different other vegetables. They

keep, by this food, their strength, and afford a great quantity of good milk. It may be with plants, perhaps, as it is with animals, too much food being hurtful to both; a dog and a cat being fed plentifully, lose their natural liveliness, grow fat, and sleep almost day and night.

If coal be really the genuine food of plants, it seems to me doubtful whether the brown mud remaining after an infusion of dung is evaporated, be real coal before it has undergone an ignition. It ought, rather I think, to be called an extract, and may again be diffused through water, or dissolved as it was before the evaporation; but when it is burned into real coal, it is become almost totally insoluble in water, as all charcoal is generally well known to be. Charcoal is not only insoluble, but almost unalterable; incorruptible, possessing only when newly ignited an antiseptic power, which it recovers again by a new ignition; and I cannot help still doubting, whether real coal reduced even to impalpable powder possesses any manifest quality by which it deserves to be arranged among manures. The justly-celebrated *Arthur Young* having put this powder to the trial, found it had no beneficial effect at all on vegetation.

Though there is no doubt but that vegetables draw in by their roots a good deal of food, yet I think the principal business of feeding is carried

on by the leaves in the atmosphere. Besides the fact of Mr. Du Hamel, described page 307, there are several other considerations which seem to give strength to this assertion. Many European trees when stripped at once of all their leaves will die (Trees in very hot climates suffer the loss of their leaves by the scorching sun for a time in dry weather without perishing.) I was present at the following fact: the sulphurous smoke from burning a few pounds of antimony, mixed with nitre, was accidentally driven by the wind upon a very thriving large pear tree, full of pears half ripe; next day I found all the leaves and pears fallen off, and the tree irrecoverably dead. A plant placed under a bell, with it's root in a phial full of water, will die when the bell is exhausted by an air pump; it will equally perish if, instead of respirable air, it be immersed in any air unfit for breathing animals. If the roots were the chief organs of feeding plants, their life might be supported in any of those airs, principally such as possess no acrimonious ingredient, such as pure azote; but pure azote will kill a living plant and prevent seeds from vegetation.

Respirable air moderately warm is alone sufficient to make a plant vegetate without any light. I found even that seeds are hurt by a strong light, grow slowly, and are often killed before

the two lobes are become leaves and their plumula or root is formed; and that if they survive the action of light, they remain commonly but weak or deformed plants. This shews, that in agriculture almost all seeds not covered will perish when the sun shines upon them at the time of their beginning to swell or vegetate. My experiments have, I think, proved sufficiently, that such seeds or embryo plants perish by the light only (which is insupportable to all very young plants, as well as plants weakened or sickened by transplantation), and not by the heat of the sun, or by want of moisture\*. When a plant is reared up in the dark, either under the ground or in a dark or shaded open place, to a certain degree of strength, light becomes more and more beneficial to it; not, however, for it's advancing in size, but for acquiring strength, getting a lively green colour, and for it's becoming fit for propagating it's species, which propagation will not succeed without sufficient sunshine, or at least day light and a due degree of heat, that is to say the heat of the air, and by no means the heat of the soil; which last, though very beneficial to some plants, is rather hurtful to several, and indeed the ground being kept moist by watering, is always kept cool by the continual evaporation; and yet plants in general thrive very well

\* See *Experiences sur les Vegetaux*, tom. II. p. 447.

in moist ground, though always kept cool. Trees in a forest spread their principal roots to such a depth as the heat of the atmosphere can never reach; their roots are, winter and summer, in an uniform temperature of 50-52 degrees of Fahrenheit's thermometer. This shews that the vegetation of trees, as is that of almost all plants, being stopped, or nearly so, during the winter, is revived by the heat of the atmosphere alone, without any regard to the heat of the soil, which is scarcely subject to any alteration but at the surface. The heat of the atmosphere alone sets the juices of trees into motion, which motion sets, by propagation also, the juices of the roots into the same motion; thus the juices drawn from the roots upwards empty the filaments and suckers, which by this motion upwards must naturally become powerfully absorbent, without any degree of heat being more necessary for this absorption or attraction than is required for the suction of an ordinary pump. Boyle or Hales (if I recollect well) applying a glass tube to the trunk of a vine cut off in the spring, collected a very large quantity of juice pumped up by the roots, which motion of the fluids in vegetables depends greatly upon their irritability, according to Mr. Van Marum; which seems to be the more probable, as an electrical explosion directed through a plant, such as an *euphorbia*, stops im-



mediately all motion in it's juices by extinguishing the irritability\*.

The roots thus absorbing the moisture presented to their suckers, take in, of course, all salts, earth, metallic substances, &c. that can be dissolved in water, or in the saline matter to be found in almost all waters. This solvent is found to be for the most part fixed air. Though we find some of these salts with all their characteristic qualities in some plants growing in a soil impregnated with them, as are many plants growing near the sea shore which are full of sea salt; yet it is not less true, that most part of the ingredients imbibed by the roots as well as by the leaves, trunk, and branches, undergo almost a total change in the organs of the plants, even so far as to produce in one plant a wholesome food, and in another, it's next neighbour, a true poison. But as I have proved before, that the atmosphere alone can furnish to some plants all that is wanting for all their functions, we ought not to look too anxiously among rubbish or dung for the true and natural food of vegetables, though in those substances a greater quantity of this food is at hand ready prepared and partly imbibed in the form of carbonic acid,

\* See Lettre 2d de Mr. Van Marum à M. Ingenhousz, dans le Journal de Physique de M. Lamethery, pour l'annee 1792.

mucilage, oily and saline matter, by which the plant is enabled to provide food for throwing out and nourishing more branches, flowers, and fruits. I think it difficult to conceive how a large tree finds, during centuries, nourishment on the same spot, in the supposition of Mr. Hassenfratz, that it's principal food is coal; and that this coal is not derived from the decomposition of the carbonic acid (of which coal constitutes nearly one third, according to Mr. Lavoisier  $\frac{2}{100}$ ). That gentleman admits my discovery as well founded, that plants produce carbonic acid in the dark; and that roots being always deprived of day light are, of course, incessantly occupied with this business. There exists every where in the soil common air, and common air alone is sufficient to furnish, as I have proved before, carbonic acid, even without plants. Thus there is no difficulty in tracing the source of this coal, and of conceiving how the largest tree finds, during centuries, that immense quantity of food it requires for it's maintenance, growth, and abundant production of fruit or seed, all which is certainly derived in part from the soil; but I still believe chiefly from the atmosphere, by means of the leaves absorbing and decomposing the air in contact with them. In the sequel of this paper, the manner by which the roots of trees beget carbonic acid will be further traced.

The transmutation of common air into different solid bodies, such as plants, is a very ancient doctrine; Pythagoras and Epicurus took this for an undoubted fact, and Lucretius, who has adorned his poem de *Rerum Natura* with his doctrine, says that air changes continually into different other substances, and that these are again decomposed into air, which afterward returns again into the composition of the different bodies; and that if this incessant rotation did not exist, every thing in this world would have been changed into air, which, of course, would have been at last the only substance existing.—These are his words :

Aëra nunc igitur dicam, qui corpore toto  
Innumerabiliter privas mutatur in horas.  
Sempër enim quodcumque fluit de rebus, id omne  
Aëris in magnum fertur mare, qui nisi contra  
Corpora retribuat rebus recreetque fluentis,  
Omnia jam resoluta forent et in aëra versa.  
Haud igitur cessat gigni de rebus, et in res  
Recidere assidue, quoniam fluere omnia constat.

*Titi Lucret. Car. de Rerum Nat. lib. V. v. 274.*

Anaximenes said that all bodies are made of air.

On a preceding page of this paper I hinted at a new theory of a curious fact, viz. that plants accelerate their growth in the dark, and advance the least in the middle of the day (which is an observation of Mr. Gardini). Though this

theory may perhaps be erroneous, yet as it is supported on a real fact, I may be permitted to say further, that plants changing in the dark more respirable air into carbonic acid than they can digest, they throw out a large quantity of it, and thus render the air in contact with them less respirable, and that in the day they absorb with the atmospheric air so much matter of heat and light, or caloric furnished by the sun, that they cannot digest it all, and therefore throw it out as superfluous, combined with the oxygen, which has thus acquired the nature of vital air, which vital air, though not yet obtained by plants in it's greatest purity, is, however, in itself full as pure as that which we obtain from the best manganese or any other ingredient. (See my book on Vegetables, French edition, vol. II. p. 182.)

In a letter to Sir John Sinclair, dated December 2, 1794, I quoted, as a proof of carbonic acid being the principal food of plants, the fact I discovered, that the wonderful apparatus which a plant produces when it is occupied with the propagation of it's species, viz. the flower, is incessantly producing carbonic acid. By this observation we may be led to the knowledge of the true natural food of vegetables; and it may be said as a further illustration, that if we were desirous to know what is the natural food of some

particular animals, one of the surest methods to find it out would be to observe what kind of nourishment the parents bring to their young. Thus we should find that a pigeon is best fed by grains, and a swallow by insects. By a similar conclusion I may infer, that the true or principal aliment of plants is respirable air decomposed. By examining the air thus decomposed, I found it consisted of two substances, viz. of fixed air or carbonic acid, and phlogisticated air or azote (see my book on Vegetables, French edition, vol. I. p. 90, and in different other places of vol. I. and II.); but as carbonic acid contains two distinct substances, viz. coal, or carbon, and oxygen, it may be questioned which ingredient of the two is the real food we look for. Mr. Hassenfratz thinks it is principally coal; though his opinion is that the plant does not derive the coal from the carbonic acid, but from the soil or dung: I am much inclined to think that both these substances serve as food, and I am moreover inclined to believe that the azote enters also the plant, and has also some share in feeding it. One of my reasons for thinking so is, that plants absorb continually the whole of the atmospheric air\*; and that in separating this fluid by decomposition into it's con-

\* See vol. II. of my work on Vegetables, French edition, p. 92, 94, and following; as also p. 121, 173, 186, 504.

stituent parts they throw out that part of it that they cannot all digest at the time it is produced, viz. at night the azote and the carbonic acid disengaged one from another, or only mechanically, not chemically, as formerly they were mixed, and in the sunshine the oxygen almost alone, the carbon and the azote remaining within the plant at that time. Though I think it probable that the azote enters in some way or other into the composition of plants, yet I think it is not absolutely necessary for a plant, as a plant thrives admirably well without it, viz. in pure oxygen.

It is true, however, that plants also die in pure carbonic acid, but in this case the plant may be perhaps considered as if it were choked with it.

I acknowledge very readily that the just-mentioned theory has not all the clearness I should wish to give it. The facts, however, quoted to support it, though contradicted during twelve years, are now admitted publicly, even by those who have been the principal champions and the most violent (even to declare my new doctrine to be a downright *calumny against nature, to be revenged by nature itself*) against it.

As all the most powerful manures have one common quality, viz. to contain or to disengage a great quantity of carbonic acid; and as dung

applied too liberally injures vegetation, it seems to be probable, that the principal attention in manuring ought to be directed to the time of applying it to the soil, which is when it is in the height of it's putrid fermentation (the acid and vinous fermentation preceding the putrid fermentation cannot be observed in dung, as they pass too quick to be observed, or perhaps do not happen at all in a substance so highly putrifiable); and indeed the most skilful husbandmen think so and practice it. Thus the great force of putrefaction, which would at last have destroyed the whole ferment, being checked by spreading the dung over the land, or ploughing it in, begins anew in a more moderate way, by the help of warmth and moisture, at a time when the growing plants may absorb the fixed air or carbonic acid, either as it is when just formed, or as it is being incorporated with moisture or other substances, such as different salts and earths, of which various kinds are to be found in almost all soils; which substances brought in close contact by moisture, act on one another chemically; that is to say by various combinations, attractions, or simple and double, or compound chemical affinities. Of all those species of *synthesis*, *analysis*, and attraction an almost constant attendant is the disengagement of car-

VOL. XXXVII. No. 212. Y

bonic acid\*. Animal and vegetable substances probably act as manures only, when in the act

\* If, when we cast our regards with astonishment on the vast scene of that perpetual rotation of organized beings changing continually one into another by acquiring life and disappearing by death, we consider that all living animals, by their respiration, perspiration†, digestion of their food, and by the putrid fermentation of their bodies after death; that all vegetables, as long as they live, as well as when they are in a state of decomposition after death; and that, in short, all the operations of an infinite variety, every where obvious on the surface of the earth, have one general effect—that of producing carbonic acid, even in the middle of putrefaction, by which volatile alkali, now called *ammonia*, is chiefly produced: if we add to this consideration, that even the inorganized bodies, those of the mineral kingdom, have in many instances, as we have already hinted, a considerable share in assisting the two other kingdoms of nature in preparing this aërial fluid; if we consider, I say, that all these innumerable operations conspire, as it were, in producing one general substance, is it possible to doubt that this fluid, the carbonic acid, has an utility as extensive in this world as is it's almost universal production?

But it may be asked, why is it not to be found in the atmospheric air, if it is almost every where produced? The reason I think to be, that as soon as it is generated, that is to say, as soon as the carbon is combined with the oxygen and the caloric dissipated, it ceases to be intimately combined with the atmospheric air; having acquired a superior specific gravity, it quits the common stock, sinks to the ground, and

† See my book on Vegetables, p. 133, English edition. The article is, On the Nature of the Air oozing out of our Skin. Dr. Priestley denies absolutely all aërial evaporation from the surface of animals and plants. Some very recent writers seem to claim this aërial evaporation from our skin as a new and their own discovery.



of decomposition by putrefaction, during which period a great quantity of carbonic acid is produced. This putrefaction is promoted by almost all salts when mixed with those substances in moderate quantities, but is checked by a large proportion of those salts, as Sir John Pringle found. It is thus with alkaline salts, common salt, gyps, &c. which last is a vitriolic salt with an earthy basis. This notion may account for the benefit which the Germans and the Americans derive from employing gyps as a manure. The latter find it even worth their while to draw this ingredient (gyps) from Europe. I believe, however, that of all salts the alkaline salt would be found infinitely superior to any other salt, for the reason mentioned in my letter to Sir John Sinclair.

According to these notions, we may perhaps understand, why all those manures which undergo the quickest decomposition ought to be oftener applied than some others, which not being susceptible but of a very slow decomposition, such as chalk, lime, burnt and pounded bones, gyps, impart during several years the soil with prolific quality.

becomes easily miscible with moisture, different salts, &c. and thus it disappears almost as soon as it is produced, and becomes, perhaps, the first step towards the transformation of common air into solid bodies.

We may also understand why quick lime renders the soil more prolific than limestone; chalk being deprived of it's carbonic acid, attracts it readily again from the atmosphere by the help of moisture; but the carbonic acid is strongly attracted by water in which limestone is dissolved, and by this attraction the carbonic acid enters also the lime, which is by this combination precipitated, and being thus infinitely divided, is become easily penetrable by all acid, which dislodge again the carbonic acid from it; whereas limestone, whose texture is not loosened by fire, is naturally not so easily decomposed by the action of acids which it may meet in the soil.

It has a long while struck me with wonder, that the excrements of horses and cows are almost alone preserved (and that even in general with little care) for manuring, and that human excrements, which are infinitely richer, are too much neglected, many privies being so constructed that either the whole is lost in common shores, or the most enriching part of it, the salts, contained chiefly in the urine, sunk in the ground, or running to waste. We ought to learn from the Chinese how to preserve these precious relicks of our digestions, and to restore them to the soil, on purpose to be metamorphosed by it into new food. I make no doubt

that if none of a man's ejections were dissipated, but employed in due time on the soil which was allowed him to draw exclusively his victuals from, this soil would be so much fertilized by it as to afford by proper labour more than sufficient food to nourish him. The alvine and urinous ejections of one day, kept together and well mixed, are more than sufficient to dung abundantly, for a whole season, four square feet of ground. Now on a space of four square feet will grow more potatoes, or other vegetables, than a man could well consume in one day; by selling some of this superfluous portion he may purchase what is necessary to make his potatoes, or food exchanged for them, palatable. The Chinese neglect the dung of horses and cows as we do our own dung, but they provide every where covered reservoirs for storing up what we drop uselessly in the privies and the streets.

Page 290 of this paper I have advanced that some plants derive the most part of their watery substance from the surrounding air. This assertion is not difficult to prove, by considering that all organized beings possess the faculty of producing cold in a medium hotter than their own temperature, and of engendering heat in a medium colder than their temperature. Mr. John Hunter has demonstrated that trees produce heat in cold weather. Nothing is easier to prove than that all plants produce also cold

in hot weather, and that some possess this power in a more conspicuous way than others. The feeling alone of a leaf of a vine in the sunshine will convince any one that it is colder than the leaves of the greatest part of the neighbouring plants. The continual evaporation of plants, no doubt, has it's share in producing this cold; but there is little doubt that this cold is chiefly produced by the vital organs of plants and the construction of the leaves. A bason full of water will become sensibly hotter in the sunshine than the leaves of some plants, though there is infinitely more evaporation from the surface of water than there is from the surface of the leaves of plants; it seems the intention of nature to prevent leaves of plants receiving too much heat has been fulfilled, partly in that part of the leaves which alone is destined to receive the direct rays of the sun, it being of a smoother texture than the opposite surface, so as to appear almost as if it was covered with a coat of varnish, from which the rays of light are rather reflected than absorbed. We know that a bright metal will receive but little heat from the sunshine, and that a piece of black cloth will be sooner heated in the sunshine than a piece of white cloth; a green piece of paper hung in a vine will receive more heat than a leaf of the vine of the same colour.

The production of cold by vegetables is of

more importance than one would at first sight imagine, as it is chiefly by this faculty that plants are enabled to draw in a part of their moisture, which enters the plant in two different ways; first, together with the air in which it is dissolved, continually drawn in by all plants, as I have proved in my second volume *on Vegetables*; second, it is absorbed by plants, being left or precipitated on their surface in a way imperceptible to our senses, by the coolness of the plant, in the same manner as the moisture of hot air is precipitated on the surface of a decanter full of cold water or ice.

Air never is nor can be without water, which exists in it in a double form.

1. As water itself is a composition of two airs, vital and inflammable, or oxygen and hydrogen, in which two substances Mr. Lavoisier found means to analyze water; and which analysis, as far as it regards the oxygen, I affirmed in my first volume *on Vegetables* to be performed by vegetables, with the assistance of the sun, even before Mr. Lavoisier, as I think, published his Analysis.

2. Air, however dry in appearance, has always a considerable portion of water combined with it, in a manner analogous to the solution of salt in water. The water thus adhering to air is easily separated from it by various means,

chiefly by cold (see page 157 of vol. II. of my work *on Vegetables*, French edition). I quote a simple experiment, which shews that the driest air contains always a great quantity of moisture.

That leaves of plants absorb and evaporate at the same time moisture and air is not more difficult to be understood, than that all internal surfaces of our bodies are incessantly moistened by a liquid transuding upon them, and that at the same time a part of that same humour should be continually reabsorbed and returned to the general mass of humours. In the third article of vol. II. of my work *on Vegetables*, and in some other places, I have, I think, demonstrated that such a simultaneous absorption and emission of air is continually going on in all vegetables.

I think it is not worth while disputing whether this simultaneous in and exhalation is carried on by distinct inhaling or exhaling vessels, or by the same vessels assuming both functions alternatively. It is not improbable that absorbent vessels in animals should also carry on the functions of transpiring vessels; or, in other words, that absorbent vessels should have sometimes an inverted or retrograde motion. This is the opinion of Dr. Darwin, and of several other men of high reputation.

Dr. Priestley denies absolutely all emission of air as well from the skin of animals as from the surface of plants. I think, however (as I have already insinuated in the former note), I have proved the existence of this emission from both, and even that our skins evaporate fixed and azote air. See vol. I. of my book on *Vegetables*.

The economy of vegetables, as far as we traced it in the former part of this paper, may lead us insensibly to farther reflections, and to trace the reason why the soil seems to be almost exhausted after it has produced certain vegetables, so as to have induced the cultivators of most countries to leave the ground at rest for a whole year. Some lands require even two years' rest to recruit their former power of nourishing the same sort of plants. Some plants exhaust the soil more than others; thus flax impoverishes the soil to such a degree that in the countries where the finest flax is produced, such as in the country of Waas, in North Flanders, and in the vicinity of Valenciennes, the value of one good crop is equivalent to the value of the land itself, and it is often sold for this value, which could not be the case if the ground was able to produce every year a tolerable good crop of the same plant. Virgil knew this difference of plants

very well, saying that flax, oats, and poppies exhaust (burn) the soil.—

Urit enim lini campum seges, urit avenæ :

Urunt lethæo perfusa papavera somno.

*Georg. I. v. 77.*

The ground laying fallow is, however, very far from having lost the power of nourishing different plants; for if it is left untouched it will be found full of weeds, which owe, in a great measure, their origin to the dung of horses and other cattle, which contains a vast number of indigested seeds of various plants. The superior wisdom of the Chinese (as we have already hinted) and the Japanese is very conspicuous on this head, as it is on many others, by preferring human dung (which contains none of such seeds) to that of cattle. Their fields are for this reason, at least in a great measure, so free from weeds, that a celebrated botanist passing lately through Japan, with the Dutch embassy, could scarce find any other plants on the corn fields than the corn itself. But in these countries the laws prohibit the neglect or waste of all human excrements, and every house has proper reservoirs for this important ingredient, of which, perhaps, not  $\frac{1}{30}$  part is preservd in most part of Europe, and principally in this country, which is considered as the most enlightened and best-



governed of all Europe, though in the middle of real distress for corn (of which it sometimes imports a million sterling's worth in one year) it throws away the substance the fittest of all for multiplying corn; and it suffers, moreover, one third of all the arable lands to lie without cultivation or enclosure.

The utility of fallowing seems hitherto not to be well understood any farther than ancient custom, founded on experience, has propagated the practice from father to son. The benefit derived from this practice is commonly attributed to the utter destruction of weeds, by ploughing up the ground several times, and to the action of the atmosphere on the soil. It seems to me somewhat doubtful whether the ancients considered the ploughing the ground so necessary in fallows as we do; as Virgil, whose superior skill in the husbandry of his time is generally acknowledged, speaks of the utility of fallowing as consisting only in leaving the ground at rest, without stirring it by the plough, which rest he even prefers to the rotation of crops.

*Sic quoque mutatis requiescunt fœtibus arva.*

*Nec nulla interea est inaratæ gratia terræ.*

*Georg. I. v. 82.*

The first of these benefits, that of getting rid of the weeds, which multiply themselves by propagation, is evident enough; but it has not yet

been determined what operation the atmosphere performs on the land to restore it's fertility. Those who have attempted to find it out by analysing the soil before and after the fallow, have laboured in vain. I imagined a long while ago, and told it to several of my acquaintances, that an inverse way of examining this mysterious influence of the incumbent air on the soil might possibly be the best if not the only way to unriddle this difficulty, that is to say, to examine not what the soil had gained, but what the incumbent air had lost.

When, in 1779, I engaged in the research on the mutual influence of the vegetable kingdom upon the animal creation, or on the relation which exists between the two organized kingdoms in regard to the common element of both, the atmospheric air, I took not so much notice of what happened to the plants themselves, when confined with their own element, as what happened to the air confined with them in the light and in the dark. I contented myself, as to the plants, with finding that they suffered nothing by having been shut up with their own element during some hours. But on purpose to make the following reasoning more coherent, I must beg leave to make a short recapitulation of some articles already explained in the former part of this paper. After having satisfied myself about

the safety of the plants, I found, by examining the air shut up with them, that it was affected by the plants quite differently in the day light from what it was in the night, or even in a dark place in the middle of the day time. I found that the plants communicated by day time to the air in contact with them, oxygen (vital air) or the general acidifying principle, of which the atmosphere contains about  $\frac{27}{100}$ , and that at night, or in a dark place by day, they communicated to the air in contact with them fixed air, now called *carbonic acid*, which is composed of the same acidifying principle combined with coal (*carbon*), to which it has a great attraction or affinity.

I inferred from these, and some other facts quoted before, that plants, in the common course of nature, draw from the air, in a great measure, what is necessary for their subsistence; and that being thus incessantly occupied in decomposing common air, they render a part of it miscible with the ground, or with substances inherent in the earth, such as moisture, salts, &c.; and that carbonic acid, which is now admitted (according to my original idea) as a nourishing substance for plants, and prepared without intermission, day and night, by the roots and flowers, and in the night by the leaves and the rest of the whole plant, must have been destined

by nature to some important use for plants themselves; an utility whose importance must be equivalent to the wonderful action by which it is produced, not only by plants, but by an almost universal operation carried on all over the surface of the earth, at the time principally when all vegetables want most nourishment. Being full of this persuasion, I thought it very probable that the soil must also have it's share in contributing to this almost universal process of nature. By putting this suspicion to the test of experiment, I found that the soil, even without the assistance of any plant, is incessantly employed in drawing this general and acidifying principle from the incumbent air, and in changing it into carbonic acid by furnishing it with carbon, of which the ground is never deficient; that the soil performs this decomposition of the air night and day, though more powerfully by day and in warm weather, than in the dark and in cold weather; and that this decomposition is sometimes so powerful in good garden ground, that it counteracts even the influence of the most vigorous plants in the sunshine; so that the earth of a flower pot communicates sometimes more carbonic acid to the air, confined by a glass bell (with which the plant and the flower pot are covered), than the plant had communicated oxygen, which oxygen being

absorbed at the same time by the soil, the remaining air had lost more of it's oxygen by the attraction of the soil than it had acquired by the presence of the plant. See my *Experiences sur les Vegetaux*, tom II. p. 119, 188, 438.

Eight cubic inches of good mouldy ground, without manure, exposed in a tea saucer to the contact of eighteen cubic inches of atmospheric air during three days and nights in summer, the weather being agreeably warm, but constantly hid from the sun's light by covering the apparatus with a flower pot, had contaminated the air to such a degree that a wax taper could not well burn in it. One measure of this air, mixed with an equal measure of nitrous air in the eudiometer described in my work on *Vegetables*, was reduced to one measure and six-and-thirty hundredths of a measure; whereas one measure of atmospheric air, mixed with an equal measure of nitrous air, was reduced to one measure and two hundredth parts of a measure. A similar quantity of the same soil confined with the same quantity of air, the apparatus being left uncovered so that the sun did shine upon it during most part of the day, had injured the air still more, so that this air had lost most part of it's oxygen. At the same time I exposed two similar quantities of common air to the action of eight cubic inches of well-manured garden

mould, one of these apparatus being exposed to the sunshine, the other being covered all the time by a flower pot. By examining the air of them, it proved to be still more injured than the air of the two former apparatus, principally that which had been exposed to the influence of the sun's light; so that this air, having lost almost all it's oxygen, was changed nearly into pure azote, mixed with some carbonic acid, of which acid I found manifest signs by lime water becoming troubled when shook with any of those four airs.

All this shews, in a manifest manner, that the soil draws incessantly from the incumbent air the oxygen, the general acidifying principle. There can be, I think, little or no doubt, that what happens to air shut up with earth, happens also to the air floating continually over the surface of the earth: that is to say, that the soil draws incessantly some oxygenous particles from the air sliding over it; so that in the course of a whole year a soil, principally when ploughed up several times, must have attracted a considerable quantity of the acidifying principle, principally mouldy ground, in which some decayed vegetable or animal substances capable of farther decomposition exist. Siliceous sand, either dry or moist, does scarcely or not at all injure the air in contact with it; neither is air

materially affected by being shut up with pure water. Now as all acids derive their acidity from the oxygen, of which the common store exists in the immense ocean which surrounds our globe, the atmosphere, is there not some probability that it would be possible to restore in a moment to the soil what it can acquire in no less than a whole year from the incumbent air when left to itself?

When the soil has acquired from the incumbent air a considerable portion of oxygen, either as it is existing in the common air, or combined with carbon, with which it constitutes carbonic acid, the rain will certainly carry a great deal of it to the deeper strata of the ground, and thus rob in part the superior stratum of the ground of the full benefit of this useful substance. But if by this the surface of the ground should even become almost entirely exhausted of it, it would soon recover it again from the same source, and that even in a more powerful way than it did before rain, because the soil, when perfectly dry, has but little action, if any at all, on the incumbent air. In the mean time that rain carries with it into the bowels of the earth a great deal of the ingredients useful to superficial plants, these ingredients are not lost to the vegetables in general, as they are absorbed by the deep-seated

VOL. XXXVII. No. 212. Z

roots of trees, which roots, though incessantly occupied themselves with shifting from the air always existing in the ground, the carbonic acids (See my work on Vegetables), must acquire by this conveyance a fresh and, probably, necessary supply of it. Besides this power of shifting carbonic acid from the air by attracting it's oxygen and furnishing it with carbon, plants possess a most wonderful faculty of changing water itself into vital air, or oxygen; which I have maintained as early as 1779. See my book on Vegetables.

I have, I think, sufficiently demonstrated by facts, in the preceding part of this paper, that not only vegetables, but the soil itself (even as caustic alkalies and quick lime) has a power of extracting carbonic acid from the atmosphere, though the French chemists assert that common air contains in itself no carbonic acid at all; which is not easily to be accounted for but by considering that there is in this world going on an incessant rotation of beings, by the continual new combinations, attractions, mixtures, and affinities in animated and inanimated beings.

It seems to be more than probable, that the soil, laying fallow, attracts from the incumbent air more of the acidifying principle than it does when covered with plants; as at that time the contact with the air is partly hid from it, and as



the vegetables themselves take it in, in proportion as it is formed.

Would it not from all these considerations taken together appear probable, that the oxygenous principle may be in a moment imparted to an exhausted soil, by pouring upon it, a little before the sowing of fresh corn, one of the most concentrated acids, much diluted by water or divided among a heap of earth? I am of opinion, that the first trials, if thought worth while to be made, should be made with concentrated muriatic or vitriolic acid, principally the latter, by mixing it with a sufficient quantity of water, or of dry sand, or earth, so that it may be thrown or scattered over the ground as corn is usually sown. We know with sufficient certainty, that vitriolic acid (even as all other acids) is nothing else but the acidifying principle drawn from the atmosphere by the burning of sulphur, and partly from the nitre added to the sulphur to assist the inflammation of it by continually furnishing it with fresh oxygen, without which no flame can exist.

This acidifying principle retains it's aëriiform nature as long as it is combined with a due proportion of *caloric*, or the matter of heat, which is considered as the general principle of fluidity in all liquid bodies; which *caloric* being consumed in the burning of the sulphur, the oxygen can no more retain it's form of air, and allies itself

with the sulphur as with it's basis, and constitutes the sulphuric acid in a similar way as this very oxygen, when combined intimately with azote as it's basis, constitutes nitrous acid, and with phosphorus, phosphoric acid.

Though I readily acknowledge that this hint is only deduced from theory and analogy, I cannot help thinking, however, that by some agricultural philosophers it may meet with some attention, or be considered as deserving a trial in various ways. Being in possession of no facts which could serve as proper guides how to proceed in such trials, I can only throw out some loose hints, the product rather of imagination than founded on experience. Having no ground at my disposal, I could only make some preparatory experiments, which, as far as they go, were rather encouraging than derogatory to my scheme. I made them last year with my friend, the Hon. Baron Dimsdale, M. P. in his father's garden. I poured about one dram of oil of vitriol, diluted in a pint of water, on a ridge about two inches deep and three feet long; immediately after I sowed in it twenty grains of wheat, and covered them with earth. I sowed also twenty grains in another similar ridge, on which I poured the same quantity of diluted oil of vitriol. These mixtures fermented very violently with the soil, which contained a great por-

tion of calcareous earth. A part of the calcareous earth was thus changed into gyps minutely divided, resembling a whitish powder. I repeated this in other spots of the garden, taking, instead of wheat, oats, rye, and barley. This was also done in some flower pots. Though the quantity of acid was in these little experiments much greater than what I would have employed on a field, yet the general result was, that very far from having hurt the vegetation of the seeds, we found the plants all very thriving, and in the most part of these spots the plants came out earlier than those which were not manured with acids. The marine and the nitrous acids had a similar effect as the vitriolic. The plants thus treated were neither retarded nor weaker than others, but rather stouter or more vigorous for the most part.

Though I can say nothing with any good reason about the quantity of acid to be employed on each acre of land, yet, if I had the free disposal of some land, I would begin by scattering on one acre twelve pounds of concentrated oil of vitriol diluted with water, or rather divided among a heap of dry sand containing little or no chalk or other calcareous earth; on another acre I would employ nine pounds; and on a third six pounds, which, at the rate of 4d.\* the pound,

\* Concentrated oil of vitriol was sold a little while ago in England and in France at the rate of three pence per

would come to 2s. the acre. If any advantage should be observed from it, some attentive farmers would soon find out the most advantageous proportion of this ingredient on different sorts of land.

It would be useless to occupy ourselves with a particular theory to explain the effects of acids on the soil, after it is demonstrated that, in the natural course of things, the atmosphere imparts to the ground the very same acidifying principle which constitutes not only the vitriolic, or sulphuric acid, but also all other acids. Thus the only difference between leaving the land in fallow and sprinkling it with a powerful acid would be, that in the first case a whole year's crop is lost in waiting for the slow operation of the atmosphere, whereas, in the proposed method, all that the air can grant in a whole year may be communicated at once to the ground.

I would advise to destroy the weeds as soon as possible by ploughing at shorter intervals, at the ordinary depth, and give the land a day or two before sowing a superficial ploughing, and break as much as possible the ground, after which the acid should be scattered on the soil, and soon after the seeds committed to the ground.

pound, by bottles containing about 150 pounds. In February 1796 it was sold at the rate of five pence. Concentrated marine acid was sold for about the same price.

I think the first trials should be made with grain to be sown in the spring, through fear that the rain would carry away the benefit in the winter.

There is, perhaps, no fertile soil which has not a portion of calcareous earth, or magnesia, or of both. These two ingredients absorb very readily any acid, principally vitriolic or sulphuric acid. With the first (the calcareous earth) it constitutes gyps; with the second, Epsom or bitter salt; in the alliance with either of them a vast quantity of carbonic acid is produced, which is easily retained by the moisture of the soil, and ready to be taken hold of by the vegetables as their food.

Could this acid not be serviceable in increasing the fertility of land in general, and restore all at once the fertility of the soil, exhausted by some very impoverishing plants, such as flax?

If I had land at my disposal, I would not hesitate to oxygenate (as a trial), in the way already explained, all such pieces of ground as were destined to lie fallow during the next season, and to sow corn on them. The loss, if it should not answer the expectation, would be trifling, but the advantage would be considerable if it should succeed. I hope, however, that some intelligent farmers will put the project immediately to the test of experiment for the next season. I would advise thereabout the follow-

ing method : to plough up several times a piece of ground; for instance, an acre, on purpose to destroy the weeds, and to bury them under the ground, where they act as manure; then to divide this spot into five equal partitions, four of which to be manured in the usual way, and then oxygenated as directed below; on the fifth neither manure nor acid should be employed, as this partition should be destined as a standard or comparative experiment. On each of these five pieces of ground an equal portion of corn should be sown in the usual way. On one of the four partitions to be oxygenated I would sprinkle about two pounds of concentrated oil of vitriol diluted, on the second three pounds, on the third four pounds, and on the fourth five pounds. The time of the rise and progress, as well as the exact quantity of grain to be gathered, should be exactly taken notice of. By such an experiment the advantage or disadvantage of this new scheme would be known at once as to the renovation of soils destined to lie fallow, and the quantity of acid the most advantageous.

If the project should succeed, a temporary rise in the price of the vitriolic and marine acids might possibly be the consequence; but the discovery of making oil of vitriol from one of the most abundant ingredients in the world, sulphur, would soon reduce it again.

In the choice of vessels to be used to spread vitriolic acid on the soil, it is to be observed that iron ones would soon be destroyed, as vitriolic acid attacks iron very violently, but as it does not destroy lead, common tin watering pots could be lined with sheaths of lead. I would give the preference to wooden vessels.

POSTSCRIPT.

As I have made mention more than once in this paper of a letter I wrote to Sir John Sinclair, dated December 2, 1794, on different articles relating to agriculture, and among others, on the beneficial effects of alkaline salts in promoting vegetation, and respecting the effect of some other salts; and as that letter makes no part of this paper, I think it proper to inform the reader, that the particularly-good effect of alkaline salt was so manifest in my own garden, that all the gardeners who saw it thought it equal to the effect of the best dung. I repeated the application of that salt in 1795 at Hartford, with the Hon. Baron Nath. Dimsdale, M. P. in his garden, and that gentleman was equally convinced as myself of it's manifest good effects. We tried at the same time the application of different neutral salts, the particulars of which experiments I may possibly publish on some other

occasion. We made also many experiments with different solutions and medicated liquids poured upon the ground, as well as steeping the seeds of different grains in them. Be it sufficient to say here, that of all the neutral salts we tried the Glauber salt seemed to be one of the best in promoting vegetation; and that steeping seeds in water impregnated with oxygenated marine or muriatic acid (which is now employed in bleaching linen in an expeditious way) had a particularly-beneficial effect in producing vigorous and early plants. The beneficial effects of these different substances may be easily accounted for by an intelligent reader, according to the theory laid down in this paper.

We were somewhat astonished that those seeds, viz. wheat, rye, barley, and oats, which had been steeped in the above-mentioned oxygenated muriatic liquid, even during forty-eight hours, did thrive admirably well; whereas the same seeds steeped during so long a time in some of the other medicated liquids, were much hurt, or had lost their vegetative power. The same oxygenated liquid poured upon the ground had also a beneficial effect.

---



# AGRICULTURE.

347

**AN ABSTRACT of the CROPS produced in the Years 1795 to 1800 on the Estates belonging to his Grace the Duke of Bedford, under the Care of John Farey, in the several Parishes of Ampthill, Aspley, Crawley, Eversholt, Fittwick, Houghton Conquest, Houghton Regis, Luton, Maulden, Milton Bryant, Pottsgrove, Ridgmont, Steppingley, Tettertonhoe, Tinglethorpe, Tuddington, and Woburn, in the County of Bedford; and Wavendon, in the County of Bucks, in the Occupation of his Grace and 55 of his tenants, not including the Woods, Parks, Water Meadows, Plantations, or Furze Grounds in his Grace's own Hands, or single Closes let with Houses, Shops, &c.**

Produce of the Land.	1795.		1796.		1797.		1798.		1799.		1800.	
	acr.	roths	acr.	roths	acr.	roths	acr.	roths	acr.	roths	acr.	roths
Wheat	591	5	872	2	657	7	763	1	852	8	882	6
Barley	437	8	646	6	698	5	701	3	692	3	610	7
Oats	527	3	369	1	471	9	208	2	407	7	494	9
Pease	108	2	125	1	195	9	169	1	141	9	91	0
Beans	381	1	247	4	214	1	339	7	264	9	155	3
Rye	137	9	196	6	86	2	73	8	53	1	101	4
Potatoes (exclusive of gardens, &c.)	3	0	3	0	1	7	1	0	3	8	13	6
Beans and pease, mixed	196	8	150	7	126	7	93	4	118	4	130	8
Vetches or tares	19	5	54	0	286	0	121	0	178	7	95	2
Cole	23	1							14	7	55	6
Turnips	392	8	401	3	386	8	441	9	408	8	478	9
Fallow (without a green crop)	973	3	723	1	747	2	577	0	596	8	593	2
Clover, sainfoin, and rye grass (grazed)	431	8	364	9	392	1	405	6	490	3	495	6
Ditto (mowed)	133	1	170	0	182	6	473	0	368	7	523	4
Old pasture land (grazed)	1897	4	1983	4	1944	3	1857	5	1843	0	1928	7
Ditto (mowed)	1307	9	1301	7	1274	2	1403	1	1386	5	1244	7
Spinneys, small plantations, or land (generally waste and unfit for cultivation) intended to be planted, sheep walks, &c.	418	2	591	5	535	8	444	9	434	2	382	9
Homesteads, yards, gardens, &c.	61	7	64	7	61	7	61	7	61	2	61	5
	8262	4	8262	4	8263	4	8266	3	8314	9	8341	0

The variation in the total quantity of different years arises from small purchases of land made in the interval.

J. FAREY.

Woburn, Nov. 26, 1800.

## OBSERVATIONS.

It was an excellent thought of the Duke of Bedford calling for this account, and I cannot refrain from remarking that Mr. Pitt should have just such a return made annually from the whole kingdom. He is a poor political economist who does not admit the vast advantage of seeing the proportions of this sort vibrating with scarcity, plenty, demand, and price. For want of this knowledge, how many measures must be taken in the dark!

The effect of the scarcity of 1795 in the wheat crop is striking:

1796	—	872
1795	—	591

---

281 added on account of price.

It fell, however, in 1797, but not to its former level; arose in 1798, 1799, and again in 1800, when greater than ever; not much, however, beyond 1796, the great rise of which year was not taken from barley.

# ON THE CONNECTION BETWEEN THE RENT OF LAND AND THE PRICE OF ITS PRODUCE.

THE great changes in the price of corn and other provisions which have happened of late years in England render it a subject of peculiar importance relative to ascertaining what ought to be the rent of land, so far as it should depend on the price of the more common products of the soil.

Let us, in the first place, calculate a common course of crops, with wheat at 6s. a bushel, barley at 3s. and the average of meat at 6d. per pound; rent of a turnip loam at 12s. an acre, tithe 4s. and poor rates 3s. 6d.

					£.	s.	d.
Rent	-	-	-	-	-	0	12 0
Tithe	-	-	-	-	-	0	4 0
Rates	-	-	-	-	-	0	3 6
Labour	-	-	-	-	-	1	0 0
Wear and tear	-	-	-	-	-	0	2 0
Team	-	-	-	-	-	0	8 0
Seed	-	-	-	-	-	0	7 0
						2	16 6
Four years	-	-	-	-	-	11	12 0

*Crops.*

	£.	s.	d.
1. Turnips - - - -	2	0	0
2. Barley $3\frac{1}{2}$ quarters, at 24s. -	4	4	0
3. Clover - - - -	2	5	6
4. Wheat 21 bushels, at 6s. -	6	6	0
	<hr/>		
	14	15	6
	11	12	0
	<hr/>		
Profit - - - - -	3	3	6
	<hr/>		
Ditto per annum - - -	0	15	$10\frac{1}{2}$
	<hr/>		

This is an ample profit, as it amounts to more than a rent, without reckoning any thing for straw, and equals 15 per cent. on a capital of 51.

Now let us calculate on the change of wheat from 6s. to 12s. a bushel, and barley 6s. and supposing poor rates to more than double, at the same time that labour rises 50 per cent. wear and tear 100 per cent. team 25 per cent. and seed 100 per cent. as with the produce:

	£.	s.	d.
Tithe - - - - -	0	6	0
Rates - - - - -	0	9	0
Labour - - - - -	1	10	0
	<hr/>		
Carried forward -	2	5	0

# AGRICULTURE.

351

				£.	s.	d.
	Brought forward	-	2	5	0	
Wear and tear	-	-	-	0	4	0
Team	-	-	-	0	12	6
Seed	-	-	-	0	14	0
				<hr/>		
				3	15	6
				<hr/>		

## Crops.

1. Turnips	-	-	-	-	2	10	0
2. Barley	-	-	-	-	8	8	0
3. Clover	-	-	-	-	3	0	0
4. Wheat	-	-	-	-	12	12	0

4) 26 10 0

Per annum	-	-	-	-	6	12	6
Expences	-	-	-	-	3	15	6

Remain for rent and profit	-				2	17	0
Allow him 15 per cent. on 8l. capital							
(instead of 5l.) as his profit	-				1	4	0

Landlord's rent	-	-	-	-	1	13	0
-----------------	---	---	---	---	---	----	---

Hence it appears that, with very ample allowances for the increase of his expences in every article, doubling the price of corn nearly trebles the rent of land.

But let it be remembered that the converse of the proposition is true also ; and that those landlords who have raised their rentals proportionably to the prices of products, must reduce such rentals by the same rule when prices fall in the ratio they had before risen.

The calculation proves what great profits have been made by farmers, who, with common crops, have sold at the late prices ; and it will account for the very great prices at which land has lately sold to *farmers* in some parts of this kingdom.

---

## COTTAGE FARMS IN A CHALK COUNTRY.

TO THE RIGHT HON. LORD CARRINGTON,

*President of the Board of Agriculture.*

MY LORD,

**Y**OUR Lordship having expressed a wish that some plan of management should be produced whereby cottagers might be enabled to keep cows on a chalky soil where grass lands are scarce, being confined to vales of no great extent ; I have, in obedience to the hint, turned the sub-

ject in my mind, and take the liberty of submitting the following sketch to your attention; not as a full or in any degree a satisfactory examination of a complex subject, but rather as a sketch of certain circumstances which should be attended to when inquiries are more particularly pointed by premiums, or any other means, to this fruitful field of political economy.

It will be productive of clearness in the examination of this substance to premise some data whereon to calculate.

For instance, I consider it as a fact which may safely be relied on, that sainfoin will succeed on this soil; that whether green or in hay it is well adapted to the food of cows\*, and that it will last twelve years if laid down clean and manured with ashes every second year. That turnips, potatoes, and tares are plants adapted also to this soil.

That a man, in any season of the year, will dig six square perches of land in a day, and in summer eight perches.

That a cow, a hog, and a family of five or six

\* Superior to every thing for milch cows. The prodigious increase of milk which it makes is astonishing, being nearly double that produced by any other green food. The milk is also better, and yields more cream than any other.

—*Bath Papers*, vol. i. p. 164.

VOL, XXXVII. No. 212. A a

persons, with some poultry, may raise manure sufficient for dressing half an acre of land in an ample manner.

Taking, therefore, these facts for granted (and I may observe that they admit of very little doubt), I shall proceed to inquire what five acres of this upland soil will do when cultivated with a view to the objects of a cottager's economy.

I will suppose the following course of crops, a rood of land to each of the twenty divisions.

1. Turnips
2. Potatoes
3. Barley\*
- 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,
15. Sainfoin
16. Pare and burn for potatoes
17. Barley†
18. Clover
19. Wheat†
20. Tares.

\* This barley may be changed for tares for soiling, and the land dug and surface cleaned for sowing the sainfoin alone, should corn be objected to.

† In cases where corn is objected to, instead of this barley, chicory should be sown alone in the spring; and being left two years, may be dug for any other crop: or it may be left three years, and then dug for the following tares.

“Mrs. Coke, of Fishponds, near Bristol, has cultivated chicory, and found it of such incomparable use for hogs as



In which rotation he will have

Of Sainfoin	-	-	-	12 roods
Tares	-	-	-	1
Clover	-	-	-	1
Turnips	-	-	-	1
Potatoes	-	-	-	2
Barley	-	-	-	2
Wheat	-	-	-	1
				<hr/>
				20
				<hr/>

Let us, in the first place, deduct the winter food of the cow, by setting aside for this purpose two acres, say two tons (on the most moderate computation), of hay, a rood of turnips, and three roods of straw. Every one will agree that this is a very ample allowance.

There remain for summer one acre of sainfoin, a rood of tares, a rood of clover, and the after grass of two acres of sainfoin. There can be no doubt of the sufficiency of this provision.

The cow being thus provided for, let us see what remain for the pigs, the family, and ex-

to induce her to recommend it to all the neighbouring colliers to have each of them a bit of land thus cropped for their pigs."—*Annals*, vol. xxx. p. 308.

If the barley in the third year, and the barley and wheat in the seventeenth and nineteenth be deducted for tares and chicory, the cottager will be able either to keep two cows, or, at least, one and a heifer constantly.

A a 2

pences : half an acre of barley, a rood of wheat, and half an acre of potatoes. Not to over rate his crops on a soil which is not of great fertility, we will suppose the barley to be three sacks, or twelve bushels, from which take two for seed; remain ten bushels for the hog.

The rood of wheat may produce five bushels; deduct three pecks for seed, remain four bushels and a half: a good assistance to the consumption of a family.

Half an acre of potatoes: a rood of it on paring and burning will yield, probably, 125 bushels; the seed 10, remain 115; which will feed the family and the pig through the dead of winter, or four or five months.

The whole provision is therefore amply sufficient for every object, and would probably leave a surplus for a calf or young heifer, certainly for an ass. If doubts occur, they are proper inquiries for experiment to ascertain.

The labour which this system would demand, is a very material part of the inquiry. It may, or it may not, require too large a portion of the cottager's time.—Permit me to examine this point.

I go back to the rotation, and take the crops in the order they stand.

1. *Turnips*.—The culture I should propose would be one good and well-turned spit of the

spade, and then surface hoeing; the best would be by a small scuffle or shim drawn by an ass. This digging takes five days.

2. *Potatoes*.—One digging, five days (his family to dibble and plant); and five days more to take up the crop.

3. *Barley*.—Five days to dig. The seed should be scuffled or hoed in.

16. *Potatoes*.—To pare and burn four days, five to dig, and five to take up.

17. *Barley*.—Digging, five days.

19. *Wheat*.—Digging, five days.

20. *Tares*.—Digging, five days.

There are three acres and a half of sainfoin, tares, and clover, part mown and part may be grazed, and half an acre of barley; allow him two days, and two more to cart the hay and corn, and the wheat one day, supposing his family not able to do the carting.

1. Turnips	-	-	-	5 days
2. Potatoes	-	-	-	10
3. Barley	-	-	-	5
16. Potatoes	-	-	-	14
17. Barley	-	-	-	5
19. Wheat	-	-	-	5
20. Tares	-	-	-	5
Mow, reap, and cart	-	-	-	5

---

54

---

Here are fifty-four days' work. But if a family be calculated at the average of sexes and ages, it would be fair to estimate that he might, even in these labours, receive some assistance of that sort; however, in a gross way, we might call it one day in a week.

It might also be observed, that in the course of a year, there are few labourers who do not lose some days' labour in the farmer's service; if they have no land, such time is too often wasted at an alehouse, but with his own farm he has a strong motive not to lose a moment.

Manuring, fencing, &c. would require some time; but we have not carried to the opposite side of the account two, three, or four hours every day in summer (harvest excepted) which he might employ of mornings and evenings, and which would far more, doubly or trebly more, than answer any such demands.

Hence it should appear (however, I offer it to your Lordship not so much a completely-deduced result, as a subject proposed for discussion), that the labour required by five acres of land, if managed on these principles, would not be any material objection to the plan.

But it here deserves to be remarked, that were we, instead of digging, to suppose horse work, and allow him only one horse, depending for a second on hiring or borrowing, the whole matter

would be reversed: the horse would starve the cow, and the account turn out unprofitable. In that case I believe he had better be without the land.

In regard to the money account of such a speculation, it does not demand any particular attention; for it must be sufficiently obvious, that the products much exceed the expences, however these may be calculated. One hundred and fifteen bushels of potatoes, four bushels and a half of wheat, a cow, and a fat hog, go evidently far beyond his rent, &c.; for if he pay 20s. an acre for the land, the product of the cow alone would more than answer it, not by direct sale, but by enabling him so to appropriate that portion of the wages of his labour.

Two circumstances remain which may deserve your Lordship's attention in offering premiums. In such a cottage system it would be of great importance to procure a scuffle that might be effectively worked by an ass; such an implement would to such a man be of the greatest use. A cart also for the same animal would be equally necessary. I have an ass car, sent me many years ago by Mr. Wilkes, of Measham, which I believe would answer sufficiently; but it is possible that a better might be invented\*.

\* Twenty years only are provided for in this estimate. It is not ascertained that a second twenty would give twelve

I cannot avoid repeating once more, that I trust your Lordship will consider these crude ideas as no more than a reconnoitre in a country almost a terra incognita. I do not know that the subject has been examined in this view, and therefore it would be presumption if I offered these hints in any other light than that of opening an inquiry for persons with greater experience and abler heads to prosecute.

I have the honour to be,

With great respect,

My Lord,

Your Lordship's obliged

And very humble servant,

May 9, 1801.

A. Y.

years also of sainfoin; probably it would not, but chicory would then come in for three or four years, in which case the clover (increased in quantity) and tares should be made into hay. If we can provide for twenty years, we may fairly suppose that the next generation will find plants to answer the purpose for the twenty following.

SUSSEX AGRICULTURAL SOCIETY.

At a meeting of the committee of subscribers to the Sussex Agricultural Society appointed to arrange the prizes and premiums for the present year, held at the Star inn, Lewes, April 18, 1861,

THE RT. HON. T. PELHAM IN THE CHAIR,  
The following resolutions were agreed to:

*Prizes for Cattle and Sheep.*

1. That *ten pounds* be given to the owner of the best bull, two years old.

2. That *ten pounds* be given to the owner of the best bull, three years old.

3. That *ten pounds* be given to the owner of the best bull, four years old, or upwards.

No bull having gained two of the above prizes can be shown for a third.

4. That a piece of plate, value *ten pounds*, be given to the owner of the best bull produced in the field, to be kept till such piece of plate be challenged by the owner of any other bull.

The challenge to be given on the day of the shew of cattle, and to be determined upon the next ensuing day of shew. The challenger to stake *five pounds* against the

piece of plate, and to pay half forfeit, on giving one month's notice that he do not mean to show, to the holder of the piece of plate.

5. That *five pounds* be given to the owner of the best heifer, two years old.

6. That *five pounds* be given to the owner of the best heifer, three years old, that shall have produced a living calf, and shall be in milk at the time of shew.

7. That *five pounds* be given to the owner of the best yoke of working oxen, of the same age, from four to six years old.

No bull, heifer, or ox will be permitted to be shown for the prizes but such as shall be led to the place of shew by a strong rope or chain, and shall be afterwards sufficiently secured, so as to prevent the possibility of breaking loose.

8. That *eight pounds* be given to the owner of the best South-Down ram, one year old last lambing time.

9. That *eight pounds* be given to the owner of the best South-Down ram, two years old last lambing time.

10. That *eight pounds* be given to the owner of the best South-Down ram, three years old last lambing time.

11. That *eight pounds* be given to the owner



of the best South-Down ram, two years old last lambing time, which shall have worked before in the flock not less than one month in the autumn, and shall have returned to the flock on or before the 5th day of April, and shall have continued with the flock till the 1st day of July upon the Down and arable land.

12. That *eight pounds* be given to the owner of the best South-Down ram, three years old last lambing time, under the same conditions as in the last article.

13. That *five pounds* be given to the owner of the best pen of twelve South-Down ewes, viz. four of one year old, four of two years old, and four of three years old.

14. That *four pounds* be given to the owner of the second-best pen of twelve South-Down ewes, of the same description as the former.

15. That *three pounds* be given to the owner of the third-best ditto.

16. That *two pounds* be given to the owner of the fourth-best ditto.

17. That *one pound* be given to the owner of the fifth-best ditto.

The two and three-year-old ewes must have produced and reared a lamb which had not been weaned before the 24th day of June preceding the day of shew; and the ewes must have been kept with the

flock sheep till within three days of the shew.

18. That *two pounds* be given to the owner of the best South-Down ram fleece, in weight and quality.

19. That *one pound* be given to the owner of the second-best.

The fleeces must be sent to Mr. Whitfeld's wool warehouse two days before the day of shew. No candidate to send more than one fleece, which is to have a mark affixed to it, not his name. Also his name on a paper sealed up, with the same mark on the outside. The unsuccessful candidates' papers will be returned unopened with the fleeces.

20. *That each candidate shall produce a certificate of the age of his stock shown, with the name of the breeder, and an account of the manner in which the stock had been kept for the last two months preceding the day of shew.*

21. That each candidate may show as many cattle or sheep as he please, but shall be entitled to no more than one prize for each sort of stock; *i. e.* for bulls, heifers, oxen, rams not kept with the flock, rams kept with the flock, and ewes.

22. That three judges for the cattle, and three for the sheep, be appointed by the committee, who will meet on the 26th day of July next at

the Star inn, Lewes, at one o'clock; and that the committee do consist of all the subscribers, seven of whom shall form such committee if more do not attend; but no person shall act as judge, or vote in the committee, on any question in which he shall be interested.

23. That the cattle and sheep be brought into the field before eleven o'clock: such as come after that hour shall not be entitled to any prizes.

24. That three stewards be appointed for the management of the business on the day of the shew of cattle; and that the Right Hon. T. Pelham, Mr. Ellman, and Mr. Hart be requested to undertake that office for the present year.

25. That the judges be requested to assign their reasons for their decisions, in the shapes and wool of the animals to which they adjudge the prizes.

That the dinner be on the table at three o'clock precisely; and that at five o'clock the stewards shall adjourn to the field, where the report of the judges shall be declared.

The shew of cattle will take place between Brighton and Lewes races, of which notice will be given in the Lewes Journal; and the candidates for the several prizes for stock must give notice in writing of their intention of becoming

so to Mr. Whitfeld, of Lewes, the treasurer, on or before the 21st of July next.

*Premiums for Sheep Shearers, Deserving Poor, &c.*

26. That *ten pounds* be given to three sheep shearers who shall shear thirty sheep each in one day (to be taken out of the same flock), in the best and most workmanlike manner; viz. shearing the closest, and clipping off the greatest quantity of wool, and doing the least injury to the sheep by cutting them, or otherwise: viz.

To the best shearer,	Five pounds,
To the second-best,	Three pounds,
To the third-best,	Two pounds.

To be determined by three judges to be appointed for that purpose. A committee of all the subscribers will meet on the last Saturday in May next at the Star inn, Lewes, at four o'clock in the afternoon, to appoint the judges to choose the stock, and to fix the day for the shearing; of which notice will be given in the Lewes Journal.

27. That *fifteen pounds* be given to five labourers who shall have brought up to the age of two years the greatest number of children in habits of industry with the least proportionate relief from the parish: viz.

To the most deserving,	Five pounds,
To the second,	Four pounds,
To the third,	Three pounds,
To the fourth,	Two pounds,
To the fifth,	One pound.

Certificates to be signed by two or more of the principal inhabitants of the parish or parishes where the claimant has resided during the bringing up of his family ; and if any claimants be possessed of property, such property, with the manner in which they obtained it, shall be stated in the certificate.

28. That *ten pounds* be given to four wives or widows of labourers who shall have done the greatest number of days' work in husbandry, not less than ninety days, between the 2d day of October 1800 and the 2d day of October 1801. Such number of days, and the different kinds of work in which the women shall have been employed to be stated in the certificates from their employers: viz.

To the most industrious,	Four pounds,
To the second,	Three pounds,
To the third,	Two pounds,
To the fourth,	One pound.

29. That *five pounds* be given to two household men servants employed in husbandry, under the age of twenty-five years, who shall have

received wages during the greatest number of years (not less than five) in the same service, and shall produce satisfactory certificates from their masters of their continued good behaviour: viz.

To the first, Three pounds,

To the second, Two pounds.

30. That *five pounds* be given to two household men servants employed in husbandry, above the age of twenty-five years, who shall have lived the greatest number of years (not less than seven) in the same service, and shall produce satisfactory certificates from their masters of their continued good behaviour: viz.

To the first, Three pounds,

To the second, Two pounds.

31. That *ten pounds* be given to three labourers who shall, with the assistance of their wives and children under ten years of age, in working by task or otherwise, during the next harvest, earn the most money (not less than six pounds), in proportion to the prices at which they shall have taken their work. Certificates to be signed by their employers: viz.

To the first, Five pounds,

To the second, Three pounds,

To the third, Two pounds.

32. That *five pounds* be given to two women servants in every kind of service, under the age of

twenty-five years, who shall have received wages during the greatest number of years (not less than five) in the same service, and shall produce satisfactory certificates from their masters or their mistresses of their continued good behaviour: viz.

To the first,	Three pounds,
To the second,	Two pounds.

33. That *ten pounds* be given to four labourers in husbandry, having been married, who shall have lived the greatest number of years (not less than seven) in the same service, and who shall bring satisfactory certificates from their employers of their continued good behaviour: viz.

To the first,	Four pounds,
To the second,	Three pounds,
To the third,	Two pounds,
To the fourth,	One pound.

No person who hath received any premium from the society for bringing up a family with the least proportionate relief from the parish, or for long continuance in one service, will be entitled to any premium on the same ground.

It is requested that each claimant will observe, that every particular required by the Society in the foregoing resolutions must be expressed in the certificate. Many inconveniences having arisen from certificates being incomplete, the

VOL. XXXVII. No. 212. B b

Society have ordered some printed forms to be prepared, which may be had at the Lewes Bank.

The day for distributing the premiums to the industrious poor, and for the ploughing match, will be fixed on the day of the shew of cattle.

---

The Society hope that the beneficial objects of their establishment will be so apparent as to induce a considerable addition to their subscription before their next meeting; and if the support which they receive shall be sufficient to render their fund, at least for some years, a permanent one, and to enable them to extend their premiums for the improvement of agriculture and the encouragement of the industry and sobriety of the labouring poor, and by thus promoting the comfort and happiness of the most deserving amongst them in proportion to their merit, to excite in them an emulation in their proper pursuits, the Society flatter themselves that they will have rendered no inconsiderable service to the county of Sussex; and that their time, and the subscriptions of those persons who shall honour them with their support, will not have been mis-spent.

And in order to advance the same desirable object by all other probable means, the Society beg leave strongly to recommend to all masters and mistresses not to hire any servant without



the production of a satisfactory written character from his or her last place of service.

Subscriptions are received at the Lewes Bank, where those gentlemen who have neglected to do it are requested to pay their subscription for the former year.

### ON KILNDRYING WHEAT.

*Tower of Alloa, Clackmannanshire,  
August 2, 1801.*

SIR,

As I find from No. 204 of your "ANNALS," that your correspondent Mr. Ruggles is very apprehensive that the insects which have infected the wheat crops for some years past are rapidly increasing, so that there is a necessity for attempting to apply a remedy, I beg leave to suggest kilndrying the seed as the most efficient one. I and many farmers in this neighbourhood have practised it for upwards of ten years, and I can venture to assert, that the kilndrying requires no very great degree of attention, and that it is a mode of preparing seed superior to the common one of pickling it. I am aware that most people startle at the idea of kilndrying seed, thinking that it must eventually destroy the fertility of wheat; but it requires a

B b 2

greater degree of heat to destroy vegetation than what is commonly imagined, as is fully proved by the experiments of Messrs. Du Hamel and Tillet, in their *Hist. d'un Insecte de l'Angoumois*, a large extract from which work is given in Mr. Mills's third volume of "A New System of Practical Husbandry." They recommend the drying of wheat in an oven after the bread has been drawn. "The usual heat of an oven two hours after the bread has been baked is about a hundred degrees of Reamur's, or 246 of Fahrenheit's thermometer."—Page 78. And in page 81, "This is confirmed by Mr. Du Hamel, who, to try the experiment, dried a parcel of corn in a stove heated to such a degree as he thought must certainly destroy the germ of every grain. He afterwards sowed this corn, and at the end of three weeks, when he had quite given it up, almost all of it sprouted. Some grains rose sooner than others, and he thinks it highly probable, that all of them would have sprouted sooner than they did if he had steeped them in water before they were sowed.

"This experiment proves that corn can bear a great degree of heat without losing its fertility, and the fact is still farther confirmed by the following incident.

"One of M. de Cers's farmers put a parcel

“ of bearded wheat into an oven as soon as the  
 “ bread was drawn, and as his design was only  
 “ to preserve it from insects, he did not care  
 “ how much it was heated. A neighbouring hus-  
 “ bandman, who was in want of seed corn, de-  
 “ sired to purchase some of this, and though  
 “ told that it had been greatly dried in an oven,  
 “ he bought it, sowed it, and found it to grow as  
 “ well as any that had not been dried.”

Our practice in Clackmannanshire being thus supported by such great authority, you may possibly think (as the season for wheat seed is fast approaching) that the following directions (which were given in my “Agricultural Survey”) worthy of a place in the next number of your “ANNALS.”

“ Let the wheat be laid upon the kiln about  
 “ three or four inches thick; the kiln to be  
 “ heated middlingly strong by blind coal; the  
 “ wheat to continue on the kiln for twenty-four  
 “ hours, but turned frequently. After taking  
 “ it off the kiln it must be allowed twenty-four  
 “ hours to cool, during which time it must be  
 “ frequently turned; then put it through the  
 “ fanners once or twice.

“ After the wheat has lain a few hours on  
 “ the kiln, and the fire begins to have effect, a  
 “ great number of very small worms, formerly  
 “ undiscovered by the eye, appear on the top of  
 “ the grain, and are soon destroyed by the heat.”

I apprehend that when the process of kiln-drying the seed is fully considered, it will be acknowledged to be a preparation superior to that of pickling it; for as the heat forces every insect out of the cells which they excavate in the kernel, the infected grain will remain hollow, and by putting it twice through a pair of fanners all the light particles must be blown away, so that nothing but the best grain is sown.

I am, Sir,

Your most obedient, humble servant,

J. F. ERSKINE.

---

### MACHINE FOR CUTTING CORN.

SIR,

London, June 10, 1801.

It has often struck me as a surprising circumstance, that in England, where so much attention has been paid, and with success in many respects, to agriculture, and under your inspection, that no attempt has been made in some powerful manner to turn the public attention more on discovery towards finding out by *machinery* or *otherwise* some mode of more expeditiously cutting down corn and getting in the harvest: no discovery could be of more consequence in a country where the harvest and wet seasons so often happen about one time. No man

can say but much useful discovery might be made on this very interesting subject, though I do not recollect any great attempt being made to direct the public attention to this great national object. No premium held out for such discovery, not even for the best essay or dissertation on it. Mean time it is a certain fact that to strangers is observable, that in England there is more tardiness in cutting down and in taking in the corns than in most other countries. Even in the vicinity of London, where there can be no want of hands, it is no uncommon thing to see a solitary hand or two employed in cutting down a field of 20 acres of wheat. Here is certainly something wrong, and the farmer should be made to know, that besides the loss to the country, there is no saving, as by employing more hands he would make a saving. In Scotland even, and which is now a manufacturing country, and where wages are high, it is now common to see a hundred hands on one field, and the farmer to find his account in it. It is of little consequence, if by improvement in agriculture we can raise an additional quantity of corn, if by want of discovery, or by tardiness in cutting down and taking in the corns we lose more than the additional quantity raised. Your country is already much indebted to you for the great attention you have paid to it's agri-

cultural interest ; and I make no doubt, but should you employ your active mind on the above discovery, or in pointing out the absolute necessity of it, and of a more expeditious mode of cutting down and getting in the crops, you would be a farther blessing to it.

I am, Sir, your obedient servant,

AN OBSERVER.

P. S. Last year, I believe, much of the crop was lost by tardiness and delay in cutting down and getting in the corns.

### COWS.

SIR,

I THINK the following calculations will show that the price of butter at 1s. per lb. is not so high as to give any unfair profit to the farmer. I suppose the land 20s. an acre rent.

Price of the cow (suppose)	-	£. 12	0
Worth at the end of six years	-	- 5	0
Decline	- - - - -	- 7	0
Or per annum	- - - - -	- 1	3
Dairy maid	- - - - -	- 1	0
Fuel	- - - - -	- 0	8
Utensils	- - - - -	- 0	2
			<u>2 13</u>

Forty weeks in milk, 4lb. per week,						
160lb. at 1s.	-	-	-	-	-	£.8 0
Hogs	-	-	-	-	-	1 0
Calf	-	-	-	-	-	0 15
						<hr/>
						9 15
Deduct	-	-	-	-	-	2 13
						<hr/>
						7 2
						<hr/>

Or 2s. 8d. per week for 52 weeks.

If she give 5lb. a week, the account will be,						
Forty weeks, 5lb. (200lb.)	-	-	-	-	-	£.10 0
Hogs and calf	-	-	-	-	-	1 15
						<hr/>
						11 15
Deduct	-	-	-	-	-	2 13
						<hr/>
3s. 6d. a week for 52	-	-	-	-	-	9 2
						<hr/>

And she would require two acres of grass, a quarter of an acre of turnips, and two acres of straw. The latter produce is therefore not at all too high. Nothing reckoned for losses.

I am, &c.

A CONSTANT READER.

REMARKS ON THE WILTSHIRE AND  
SOUTH-DOWN SHEEP.

BY MR. THOMAS DAVIS, OF LONGLEAT.

SIR,

*Longleat, 18th November.*

**A**BSENCE from home prevented my answering your letter of the 9th till now. I think myself honoured by Lord Egremont's inquiries, and hope to be able to answer them satisfactorily.

My observation, "that during the time sheep are kept in a folding or working state their food is nearly in proportion to their weight," was intended to answer a *general purpose*, and is therefore, perhaps, worded a little too generally, though, instead of retracting it, I think I might have gone farther, and said that *small sheep eat less in proportion to their weight than large ones*.

My object in making the sheep experiment for the Bath Society was to prove whether the Wiltshire farmers had acted right, not merely in keeping *borned* sheep, but in *increasing* the size of those sheep yearly, by purchasing large rams. I knew the system was wrong, because the large sheep rejected the food of the coarse part of the Downs, on which their former small kind had lived and thriven; but I knew at the same time that it was impossible to prevail on them to lower the size of their *borned* sheep. The vanity of breeding fine large lambs and selling for the highest price at the fairs totally precluded



the idea. It was, in fact, telling them that they were to give up what they called the improvement of ten or fifteen years, and begin their alphabet again. But I knew at the same time, though nobody would own it, that every *horned flock* in the country had got the *goggles* in a greater or less degree, and that they *knew* not where to get a ram that was perfectly free from it. I therefore directed my attention to introduce the South-Down sheep, as being the kind, in my opinion, the hardiest, and fittest for Wiltshire Down husbandry; but I saw clearly that to do this I must prove two things: first, that though the sheep were *individually less*, they would be enabled to keep so many more as would carry the *same quantity of dung* to the fold; and, secondly, that the *annual produce of wool and lambs* should at least be *equal* in value to that of a horned flock. To prove the first, I started the maxim, that the food they eat would be in proportion to their weight; that 400 might be kept where 300 horned sheep were kept; and that if *all* they eat was carried to fold, the dung would be equal, *if not superior, from passing through the bodies of so many animals*. (I knew I had some difficulty in getting over the loss of *individual weight*, in the effect of folding, which I am convinced is of consequence, or else why is *horse folding* so much preferable to *sheep folding* in the *Vale of Evesham*; but *that* they did not see

exactly in the light I did). And to prove the second, I contended that four lambs, at 15s. a piece, would pay full as well as three at 20s.; and that the value of their crop of *wool* would be at least one third more than that of their horned flock; and farther that the advantage to be derived from being able to keep South-Down sheep on that kind of land where their large horned sheep were then *starving* was almost incalculable.

But I know of no words whereby I could convey my ideas in favour of *small* sheep, as an *axiom*, so well, as by asserting that the comparative quantity of food they eat would be nearly in proportion to their comparative weight; because this had been positively denied by the advocates for horned sheep, and unless I could prove this all my arguments fell to the ground. The experiment which I laid before the Society proved all the rest.

I have since had full opportunity of convincing both myself and the farmers in my neighbourhood that I was right, and that I might even have gone further. Lord Bath's horned sheep (which were not of a large kind) and his South-Down flock were in weight when folding nearly as  $5\frac{1}{2}$  to  $4\frac{1}{4}$ . I found I could keep at least 100 more South-Downs upon 400, than I could or had kept of horned sheep, upon the same land; and to prove that the former eat less food, I kept some of each sort on turnips, cabbages, and hay,

*by weight*, for a fortnight, and found that the consumption was as three to four; and yet these very South-Down sheep, *when fat*, produced each 2 lb. more mutton and  $2\frac{1}{4}$  lb. more tallow than the horned sheep. I went still farther: I weighed them *before killing*, and found that the *horned* sheep were several pounds *heavier*, *when alive*, than the South-Downs, and that the reduction in their dead weight was occasioned by 15 or 16 lb. more of *paunch* than the South-Downs, though both had been *fed together, fatted together, fasted together, and killed together*.

My neighbouring farmers who kept a larger kind of horned sheep have now changed them for South Downs, and have increased their number from two nearly to three; and as to the comparative profits of the two kinds, I have had several opportunities of examining their accounts, whereby it appears that the profits of a working flock (supposing the value of a fold to be equal) have been full one and a half year's rent of the farm at an *improved rent*, whereas the produce of a horned flock on the same farms was seldom more than a year on the *old rent*.

In fact, I am so fully convinced, that if you allow the system of folding sheep on *Wiltshire Downs* to be right (which I know your father denies, though I should much like to argue the point with him) the *smaller* the sheep are the *greater* the profit. On this conviction I have

endeavoured to establish the South-Down breed, and I am happy to see I have succeeded by their rapid increase and the consequent decrease of the horned flocks. I see one objection (though it is not generally known yet), viz. that the dealers are not fond of buying the lambs, and I guess the reason to be, that they will not *get big enough for the London market at a year old*; and my fear is, that the breeders here will, on that account, be trying to *increase their size* till they get again into nearly the same evil in which they have so long been with their large horned sheep.

I could have pursued the argument in favour of *small* sheep still farther, for my experiment proved decidedly that there was a smaller kind which paid even better than the South-Downs, viz. *the Ryelands*; but as this kind was no part of the experiment directed by the Bath Society, I did not mention them in my report. Besides, as I knew that the farmers' principal objection to the South-Downs was their *want of size*, I was certain I could never get them to adopt a sort still *smaller*; and I know there are many valuable properties in the South-Downs which I am not so certain are in the Ryelands; I therefore stuck to the South-Downs, for which I hope no Sussex man will blame me.

I am, Sir,

Your very humble servant,

To the Rev. A. Young.

THOMAS DAVIS.

AVERAGE PRICES OF CORN FOR  
JULY, 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	15	2	5	7	4	1	5	11
Middlesex,	17	7	5	7	4	8	6	2
Surry,	17	11	6	8	4	8	6	10
Hertford,	15	7	5	7	4	4	7	5
Bedford,	15	9	9	2	4	6	8	0
Huntingdon,	15	2	7	4	3	4	5	11
Northampton,	14	8	8	7	4	2	10	11
Rutland,	13	0	8	9	5	0	8	3
Leicester,	14	8	8	6	4	3	8	0
Nottingham,	15	8	8	1	4	11	7	1
Derby,	16	5	—	—	5	1	9	0
Stafford,	17	8	9	0	5	5	9	3
Salop,	18	1	10	7	5	0	—	—
Hereford,	21	10	12	4	5	9	9	10
Worcester,	19	10	10	4	5	5	8	9
Warwick,	18	9	11	2	5	1	8	9
Wilts,	17	9	8	6	4	9	8	6
Bucks,	18	2	7	0	4	9	7	1
Oxford,	17	6	9	5	4	7	7	3
Berks,	16	1	8	9	4	7	7	7
Brecon,	19	9	12	10	5	0	—	—
Montgomery,	17	0	8	0	5	0	—	—
Radnor,	17	9	11	9	4	8	—	—

MARITIME COUNTIES.

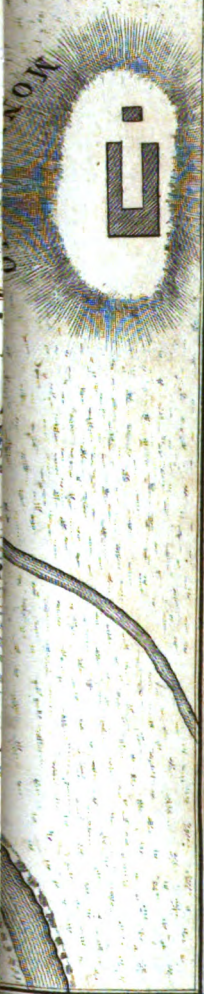
Essex,	16	7	6	9	4	0	5	6
Kent,	16	10	5	6	4	4	5	9
Sussex,	18	1	6	1	4	4	6	0
Suffolk,	16	5	4	11	4	0	5	7
Cambridge,	14	8	6	10	3	2	5	2
Norfolk,	14	6	4	7	3	10	5	3
Lincoln,	13	5	8	10	3	9	—	—
York,	14	4	6	11	4	0	7	3
Durham,	17	3	—	—	6	0	9	6

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	S.	D.	S.	D.	S.	D.	S.	D.
Northumberland,	14	10	7	9	4	11	8	1
Cumberland,	17	3	9	11	6	7	—	—
Westmoreland,	18	9	10	7	6	4	—	—
Lancaster,	16	3	8	1	5	9	8	4
Chester,	15	1	—	—	5	2	—	—
Flint,	14	9	10	1	—	—	—	—
Denbigh,	15	9	9	9	4	7	—	—
Anglesea,	—	—	10	0	—	—	—	—
Carnarvon,	15	3	8	4	5	0	—	—
Merioneth,	15	3	10	0	4	9	—	—
Cardigan,	15	7	10	9	4	2	—	—
Pembroke,	14	9	9	10	—	—	—	—
Carmarthen,	18	0	10	3	4	4	—	—
Glamorgan,	19	3	9	6	5	1	—	—
Gloucester,	20	6	9	8	4	10	8	7
Somerset,	19	10	—	—	8	5	10	6
Monmouth,	21	9	12	9	—	—	—	—
Devon,	16	7	9	5	3	10	—	—
Cornwall,	15	8	10	1	3	6	—	—
Dorset,	17	8	9	11	4	9	10	2
Hants,	18	7	8	0	4	3	8	0
General average,	16	10	8	10	4	8	7	8
April	18	11	11	0	5	8	9	6
May	16	3	9	7	4	11	8	3
June	16	1	9	0	4	7	7	10





Fig. III. P. 276.



Scale of Feet



---

# ANNALS OF AGRICULTURE.

---

## WARPING IN ITALY.

*(With a plate.)*

IT is rather singular that such a practice as warping should have been known in Lincolnshire and a part of the west riding of Yorkshire between thirty and forty years, and yet none of our writers on husbandry have taken the least notice of such an admirable improvement, so much exceeding every other that has yet been discovered; and it is more singular still that both those counties should have been surveyed for the Board of Agriculture, and reports printed without any mention of such a practice: the first publication describing it (as far as my reading extends) was the account of Lincolnshire which I drew up for the Board. But little as was known of it in England, in Italy it has been long practised. Sluices were there invented, and the first navigable canals made that were known in Europe; and the

VOL. XXXVII. No. 213. C c

more that most interesting country and it's history are examined, the more it will be found to have been the origin of most of the useful inventions which have introduced or facilitated the practice of all the arts. The following extracts from an Italian memoir will shew that warping\* there has received much more attention than we have given it in England. I read the original with pleasure, and my friend Sir John Dillon obliged me by rendering it in English.

A. Y.

## EXTRACTS FROM AN HYDRAULIC ESSAY ON EMBANKMENTS

BY SIGNORE AL. LEONARDO XIMENEZ,  
Hydrographer to his Royal Highness the Grand Duke of  
Tuscany. Crowned with the Accessit of the Florentine  
Society De Georgofili, 1777.

TRANSLATED BY SIR JOHN TALBOT DILLON,  
*Knight and Baron of the S. R. E. Member of R. I. A. and  
Under Secretary of the Board of Agriculture.*

MANY are the laws of nature, established in  
the infinite wisdom of the Supreme Being, for

\* The Italian word is *colmate*. My excellent friend Dr. Symonds, in his very elegant and entertaining paper on the soil of Italy (*Annals*, vol. ii. page 195), has described it, and quoted Palladius for the expression, '*Valles quas fluminum saturabit aggestio*,' which the Italians express by the word *colmate*.

the duration, harmony, and perfection of bodies, either solid or fluid. The laws of gravity, of projectiles, of oscillation, and percussion; the fall of heavy bodies, the motions of some, whether equal, accelerated, or slow of others; the laws of fluids, either stagnated or running, with many others too long to detail, have been ordained and established for the more perfect and durable state of the universe, and benefit of it's inhabitants. Setting aside all those which are remote from the subject under present consideration, we shall only consider what relates to the motion of fluids, and for a particular object.

Rivers, torrents, or rivulets, descending from heights, and having a determined volume of water, as well as specific gravity, acquire in their descent a difference of velocity proportioned to the square root of their height; and their momentum increasing with the square of their velocity, they begin at first to detach such particles of earth as they meet with in their course, of less resistance than the impulse of their force; and thus continuing for a series of ages, form deep vallies amidst mountains, carrying away the materials into the subjacent plains. Thus continuing to eat away every thing that oppose their course, they bear down to the sea shore, and in time extend their alluvions. The origi-

nal rivers, constrained to form irregular courses through the very plains they had produced, form channels through their more ancient alluvions.

The inhabitants in the vicinity of rivers have not failed to observe their various phenomena ; they noticed that after the greatest overflowings of their torrents, they recovered the surface of the ground submerged ; and comparing the height of the flood relative to the surface of the country, they found that by opposing long banks of a prismatical form, made entirely of earth, and of a small height, they could with ease avoid the great overflowings, and preserve the ground dry. As for rain water, they contrived tunnels, which intersected the plains ; and being deep enough, the fall of rain, however heavy it might be, was conveyed into the sea. Thus the ancient branch of the Po known by the name of *Padusa* was recovered, and the *Seven Seas* (as they were called) that formed it.

Thus the plains contiguous to many rivers were cultivated at first by being entirely separated from them. In course of time those embankments became of no further use : the people then set about raising new ones, so that in some provinces the new ground became of great extent ; the sea coast gradually gaining ground upon the sea itself, the running waters began to become inactive by the notable diminution

of the declivity. From this misfortune ensued the almost general loss of the ground that had been recovered; and thus we see at last in our days the plains become barren and useless, to the great detriment of the state and of agriculture. What remains, then, for the wretched inhabitants but to endeavour to recover the benefit of the ancient alluvions to which they were indebted for their former fertility. In this state of things many were clamorous who had perceived the losses arising from the abuse of those embankments, and have inveighed against them with much zeal; others again, adhering to what they had been taught in their youth, have opposed and still oppose the destruction of those banks; in so much that in our Tuscany, and in all Italy, two parties have arisen, the one for preserving, the other for destroying them. Plausible arguments have not been wanting for both parties. Under such a variety of opinions, it was doubtless commendable in the Royal Academy of Agriculture to take the opinions of the best-informed and enlightened men concerning a problem of this nature, respecting which, while I presume to offer my own opinion, I cannot flatter myself with success; however, I shall not be blamed for not coming forward with my endeavours, weak as they may be; which, if they be deficient in point of sound argument, will at

least evince my good will and readiness to render any service in my power to the public and to my country.

#### ARTICLE FIRST.

##### *Different Opinions concerning Embankments.*

The erection of dikes or mounds near rivers had continued all over Italy as a settled custom until the commencement of the present century; and the minds of the different proprietors have been occupied in laying down minutely all the rules and devices to shew their proper sections, with their height, size, and other dimensions. Innumerable tracts have been printed to point out the best mode of constructing them, and it may be said that this science has arrived in Italy at it's *ne plus ultra* state of investigation. Not only the more enlightened, but even people in general were so prepossessed in favour of these embankments, that in every river, rivulet, or stream they imagined they could not do without them. They scarcely perceived a brook issuing from a hillock, but they employed themselves immediately in confining it on both sides with mounds of earth taken from the adjacent ground. The water was thus carried on though the low grounds till it met with another brook. This again being reunited, was elevated above the level

of fields, even above the summit of vines or of trees cultivated in it's vicinity, until it emptied itself into a considerable river commanding all the environs, and was thus enabled to carry all these waters to the sea, the great deposit, not only of the river itself, but (which is of more consequence) of all those substances the most valuable and conducive to the fertility of all the adjacent parts, which by this means remained in an uncultivated and barren state.

Every one can apply this general idea to the rivers *Ombrone*, *Busenzio*, *Stella*, *Bagnolo*, and many other streams and brooks, which are so carefully embanked to the very foot of the hills.

The mischief arising from those embankments has become more and more notorious, as we shall set forth, and many have inveighed against them, as most pernicious to the country and to agriculture, demanding their destruction, that the fertilizing matter on the soil may be restored to those spots which have become barren. These have brought forward the example of kingdoms and states where the very name of such embankments is unknown. They alledge the famous one of the Delta in Egypt, formed by two branches of the Nile, and named by the ancients *The Gifts of the Gods*. Moreover, they pretend that a new region, as it were, would be

produced from the old one when these dikes are destroyed,

#### ARTICLE SECOND.

*Arguments to prove the Inutility of Embankments of this Nature, and to shew the Damages occasioned by them; with the Answers thereto.*

The reasons that may be alledged, not only to prove the inutility, but also to shew the damages arising from such embankments, are neither of a trifling nature nor few in number.

- In the first place they quote the example of so many other nations who, in lieu of embanking their rivers, leave them free for the waters to run without restraint over the adjacent fields, and keeping their course within their own alluvions, according to the power of the water and the resistance of materials, the rivers, as it were, disdaining their boundaries, frequently rush over into the adjacent fields, and cover them with a quantity of pebbles and sand, which render them barren for ever.

The impetuosity of the water carries away with it all the finest and fertilizing particles of the soil. Cattle are frequently drowned and houses submerged. The overflowing of the river *Ombrone* was tremendous on the coast of



Tuscany in 1759, and destroyed 12,000 head of cattle, great and small.

In September last the overflowing of the Adige occasioned the inundation of a whole province, and the lower city of Verona; which *would not have happened, they say, if the Adige could have raised it's own slime over the plains.*

Another mischief arising from these embankments is, that as the course of the rivers is of a level superior to the surface of the adjacent ground, the complaints are continual of the waters penetrating and filtering through to the adjacent fields, even to a considerable distance, by which the soil is so chilled as to become totally unfit for vegetation; and such damage is the more sensible, as the fields remain always on the same level, but the rivers or streams always rise. This might be made very clear by numerous examples, did not the conciseness I propose to myself exclude such details.

In opposition to the above reasoning and facts, the partisans of embankments alledge, that such is the state of all human things, that the general advantages arising from any given system are always attended with some inconveniences. Thus if dikes be broken down, damages may ensue; but while the waters are kept within bounds, they afford advantages sufficient, pro-

tecting by their elevation the agriculture and products of the soil. If, then, a breach of only thirty or forty braccia\* be so much lamented on account of the mischief that ensues, how much greater would be the damage were all the dikes to give way, leaving so many rapid torrents at full liberty to overflow the adjacent ground, which in a short time would destroy all the fruits of Tuscany, as may be easily proved.

If other nations abandon rivers to their natural course, it arises from the great richness of the soil, which cannot be cultivated in that particular manner like Italy; they are satisfied with the produce of meadows so necessary for the great number of cattle pastured thereon: but Italy, on the contrary, and especially our province of Tuscany, is so restricted in point of extent, that were we not to stimulate industry, and protect every inch of ground from the ravages of water, we should run the risk of wanting the common necessities of life.

The third disaster alledged by these complainants is, doubtless, well founded; but at the same time, proceeding with due caution, every one will find it less than represented, the damage being confined to twenty or thirty braccia in length, and that small surface even does not

\* The braccio is  $22\frac{1}{2}$  English inches.

remain useless, as it produces good pasturage for cattle which the peasants keep in the stable.

It must be allowed that the damages are very considerable on occasions of very great floods, and one half of the district of Pisa suffers from such inconvenience ; but though this cannot be avoided, it may be lessened in different ways. Therefore, collecting every argument with brevity, it may be answered to the opponents of dikes, that the evil is less than they represent ; and comparing the advantages and disadvantages, the former seem to overbalance the latter ; therefore it is better the embankments should remain, rather than demolish them precipitately.

ARTICLE THIRD.

*Arguments for the Utility of Dikes, and the Necessity of having such ; with the Answers thereto.*

If these embankments were not useful, say the advocates for them, doubtless the necessity of them would cease of course. To make them is costly, as well as to keep them in repair. The expence on these occasions makes the people, before they lay out their money, examine strictly the profit and expenditure. These expensive works not being carried on by any laws of the state, but by the free choice of the proprie-

tors, they cannot be prevailed upon to engage therein without a clear appearance of real profit; and when experience and matter of fact have not convinced them of the utility of such expence, no improvements will be made, and the first dikes will remain in their primitive and slender altitude.

If, then, these dikes in the course of several centuries have been always elevated and flanked in proportion to the altitude of the waters of adjoining rivers; it must be acknowledged, from the experience of so many centuries, that they are useful to the public, as well as to individuals.

Exclusive of experience, many reasons appear in their favour. In the first place the irregularity of the water's motion, rushing forward here and there, would occasionally destroy the industry of the peasants. Sometimes the mischief is increased by the fall of snow, or, in autumnal rains, by great heaps of sand; at other times they bring down great quantities of pebbles, causing, instead of fertility, an arid desert. In such a case is it not better to constrain and convey the water under certain regulations according to it's qualities? Is it not better to carry away all these heaps of sand to the sea, than to collect and leave them on our fertile plains?

If the charges of these embankments be very heavy on the pockets of individuals, nevertheless the money circulates in the state, is of use to the poor, and no essential prejudice to the affluent ; and therefore is not an injury to the public.

The improvements made at the mouths of rivers increases the territory of the state, and become an acquisition rather than a detriment. The Delta in Egypt, already mentioned, is nothing more than what arises from a very ancient and continued prolongation of the river, which, by it's running for so many centuries in the manner it has done, has occasioned the creation of that extensive province. If, then, this be considered as a precious gift of nature, how can ground thus acquired be considered as a grievance ?

It cannot be denied that the prolongation of any river to the sea does not produce the inconvenience of diminishing the declivity until it arrive at a given point where it's channel is in a manner interrupted. Nor can it further be denied, that in consequence of such distance and diminution of the declivity, the elevation of the channel ensues, and by that in course of time is either choaked up, or at least the current impeded, in the greatest plains, as is visibly the case with the river Arno ; and may be seen in different parts of the district of Pisa, which has

been noticed by the most accurate observation.

When we fairly acknowledge such an inconvenience, the remedy thereof should not be overlooked, which consists, first, in procuring the lowest levels of the mouths of streams, endeavouring to obtain a fall corresponding with the loss sustained by the elevation of the channel, as has been done in many canals which I could name.

It consists, in the second place, in removing the many tortuosities which lengthened the course, by which the declivity is decreased.

It consists, thirdly, in procuring a larger channel where it is most wanted, thus obtaining a prompt discharge in a few hours of the increased waters.

Nor should we omit another great benefit received from these embankments ; because, as they confine the water in a narrower compass, they increase it's velocity : by the help of this, greater energy is given to the excavating powers of running water. It is an established theorem in hydraulics, that the power of a fluid increases with the square of it's velocity ; and therefore it is a consequence that to a dilatation of water ten times greater, there corresponds a power or force 100 times less ; and to any other dilatation, whatever may be it's ratio, a diminution

of force will correspond proportioned to it's square\*.

From the clear insight arising from such a theorem every one will perceive, that running water losing a great part of it's force, the channels will fill up to the height of one, three, or more braccia, till, after a long lapse of time, even for centuries, the rivers will remain embanked in their alluvions; then restricting the sections of the canals, they will excavate again, and the running water will recover it's declivity, lost before for ages. This, then, is the bright idea of destroying embankments and forming deserts in our days, by having ground elevated three or four centuries afterwards.

The contrary party alledge the following reasons:—

1. With all these ingenious works of embankments, either to convey to the lowest point or to restrain the channels of running water, it is yet demonstrated that a considerable portion of land has become barren in the lowest parts of Tuscany.
2. That other considerable tracts, once attempted to be ploughed, or turned into pasture, have become mere swamps.
3. That a great surface of ground covered

\* This reasoning is applicable to the case of the Eau-brink cut, and answers the objections to it. A. Y.

with trees or vines has been destroyed by the embankments giving way.

4. That the great annual expence of these undertakings might be more beneficially laid out in other things.

5. That what is gained on the coast is by no means a compensation for the loss of so much in the plains.

6. That the elevation of the channels of rivers becomes balanced and compensated by the continual elevation of the bordering country.

7. By employing the industry and expences in proper means, rather than sinking them in embankments, advantages will be acquired much more considerable than can be hoped for from embanking.

8. Finally, as the first method of improving the land by exsiccation does not suit the low lands of Tuscany, nothing remains but to substitute the second method to improve them, by alluvion, which is the surest mean of procuring wealth to the state, and plenty of produce, which the soil is at present so much in want of.

#### ARTICLE FOURTH.

*Answers to the Queries respecting the Embankments of Rivers.*

It will here be sufficient to detail certain cases where the keeping up embankments may



be prejudicial, and others where they may be useful.

CASE FIRST.

Let us then suppose a given spot in the country adjacent to some river embanked, and, to procure a course, it's mouth is prolonged downwards as much as possible, not being able to choose a lower one from some insuperable impediment, such as a hill that could not be passed over; and suppose, in this state of things, that rain water had in the lower part of the river a slender declivity of one, two, or three *soldi* per mile. Suppose again that the principal river varies it's floods, as it happens with the Arno and many other rivers of Tuscany. Under such circumstances it will happen, that in winter the second flood following the first in a few days, the current will be stopped for a considerable time, perhaps for fifteen days. The repeated falls of rain will remain stagnated during all that time, and be destructive; a fact known to have frequently happened in the territory of Pisa, and that the landlords have been obliged to dismiss their tenants and be satisfied with the small quantity of hay which may be got upon fields left in a state of nature, and which by frequent inundations and stagnated water will become barren and mere swamps.

VOL. XXXVII. No. 213. D d

In such cases what remains to be done but to strive to collect on the unfruitful soil the benefit of the slime of the hitherto confined rivers by warping, to raise again the ground as much as may be desired to recover the declivity lost.

#### CASE SECOND.

Let us now propose a case contrary to the foregoing, in which we will suppose a river enclosed within banks to run near a fertile farm, where the ground has a favourable declivity on a lower level.

Let us suppose every circumstance with respect to the river or the farm equally favourable; that this farm never, or scarcely ever loses it's crops; that it's soil is dry and healthy, and consequently produces it's regular supply of wine or oil, or any other object of it's cultivation.

The hypothesis respecting this situation being thus established, would not the prejudice be certain, if the embankments were destroyed, by which the crops would be lost, without knowing why or wherefore? Such conduct would bring down a positive loss without any prospect of profit. Therefore common sense would induce the proprietor to preserve his embankments, having no need of any aid from the river to fertilize the soil.

Sometimes they go to the expence of opening

the embankments to meliorate the quality of the soil, which improves little, though favoured by running water; at other times it happens that an opening of the embankments brings materials, such as most rivers convey, little adapted to fertility. In some cases the utility or damage is in such a state of suspense that the owner or the skilful are dubious, and prefer withholding their proceedings where the expence is positive and the profit uncertain. So various, then, are all these circumstances, either for continuing or discontinuing the system of embankments, nothing more remains than to adduce cases on both sides, whether favourable or the reverse; but before I undertake this I should be glad to eradicate certain prejudices against the method of warping.

ARTICLE FIFTH.

*Of Prejudices against the Practice of warping.*

However advantageous this method may appear, and necessary under particular circumstances, yet the prejudices against it must be noted.

It is said, that to put in practice warping, it is not sufficient to open the embankments, but other expences will follow; and when these are incurred, it is unknown what time may pass be-

fore the improvement will take place. Now such a superficial complaint can be done away by facts. All the territory of Valdichia warps ; and though many are done by the aid of funds belonging to the order of knights of St. Stephen and to the Grand Duke, yet there are many others where this is done by private individuals ; and whatever deficiency may ensue in the produce of their meadows during the warping, yet when it is effected their crops are so abundant that it makes amends for the loss of the first years and the expence of embankments.

But the warping carried on by the Carthusians of Pisa, at their farm called Montecchio, is still more apparently advantageous, and tends to convince the opponents to this practice. Not only at the present time of warping no damage whatever has been sustained, but the annual fruits of the farm have been larger than in any years previous to this practice ; and any suspence in a few articles has been made ample amends for by more abundant crops in others. If the vineyards may have suffered in any small degree, they have afterwards improved, and the vintage become more copious than heretofore.

It is not denied that to obtain such advantages the methods prescribed must be adhered to, and that they will occasion some expence to the pro-

prietor, and much attention and diligence on the part of the tenant ; but the charges are small in comparison with the profit.

If some proprietors have no other means of providing for their family than a small farm, and if such a farm should not be in similar circumstances with that of the Carthusians of Montecchio ; it must be allowed that it would not be convenient, by the laws of prudence, to adopt the system of flooding and opening the embankments : but this does not say that other situations and soils may not be similar to those of Montecchio ; and of course, by following the method introduced, the greatest advantage would ensue.

The second objection, which much perplexes the minds of proprietors, is, that this mode of flooding is not always safe, and after spending much money there is a risk of it's not answering the purpose ; in support of which they quote unsuccessful cases. The first, in the territory of Pisa, is that of the *Acquisti* ; for which the engineer, Ciaccheri, towards the end of the last century, erected a sluice on the estate of *Calcinai* : under which erection he made a canal, which was to convey the water of the river Arno for the length of two miles, to a situation to be warped, not far from the lake of *Bientina*. Every thing being done, and the first opening of the

sluice effected, the defects of this flooding were soon perceived ; and the water appeared almost clear, in so much that the enemies to the undertaking filled bottles with it in presence of witnesses, and conveyed it to Florence, to be shown to Cosmo III. of Medici, and to his ministers\*. Many are the observations which I have been able to make on this memorable occasion, arising from more pressing motives than the mere spirit of criticism or satire. In the first place it is easy to observe that the fall of water is not wanted, as was pretended, since on the superface of the Arno, on one of it's greatest branches, to the ground in question, there is no less than seven braccia of vertical altitude, which, divided on the two miles of the canal, makes more than three per mile ; and the river Arno has not such a fall on the general level of the running water. Therefore Ciaccheri could not have erred from a defect in the declivity ; but, in my opinion, his want of success arose from the narrowness of the sluice and of the canal, which brought the water and mud in small quantities. Comparing this narrowness with the great amplitude of the ground to be flooded, it must make a small deposit of slime in the first

\* This is curious, for it shews that warping was practised in the time of the Medici.

A. Y.

instance ; and not being supported by a body of water which subtilized itself in it's dilatation over a great space of ground, it does not surprise me, that in the remotest parts of the ground where it was flooded it should have been found clear. Allowing that the instance given by the opponents was unsuccessful, whether from the narrowness of the canal or any other defect, we cannot in sound reasoning thence deduce the consequence that all other warpings are precarious, when we can produce many instances of their success\*.

The same answer may be given respecting another accident on occasion of a flooding attempted at Coltano ; for which, about a mile above Pisa, a few sluices were made, with their proper falls, to let open when the water was at it's period of height, in order to conduct it to the lowest parts of the farm of Coltano. We are unacquainted with the success of this operation, but it speaks for itself, as the works were abandoned, and the soil remained in the same state of frigidity as heretofore.

Persons of discernment, on account of one or two miscarriages, will not draw consequences unfavourable to the general system, which is excellent in itself, and has only failed in parti-

\* The practice, then, must be common. A. Y.

cular cases for want of applying properly the principles to the local circumstances of situation.

Other prejudices arise from the slime conveyed by rivers, and particularly the Arno. I myself have heard that the waters of the Arno are very clear, which is ill suited to the system of warping; that to regulate a rapid river for the purpose of flooding is hazardous; with other similar objections, which alarm the ignorant. I do not think it difficult to answer such persons; and every one, though unskilful in these matters, may make the experiment when the waters of the river Arno are at their height, particularly in August. Let them be drawn off as near as possible from the surface, and received into a vessel, about a cubit in dimension, made of wood, well joined and tarred; the vessel thus filled, let the water remain quiet until the slime contained therein has made a deposit, and the water become clear; then measure the depth of such water and deduct the portion of slime; which being calculated with the volume of water, the exact difference will be ascertained between the water and the slimy matter. Repeating this at different seasons of high water, particularly the autumnal ones, the arithmetical medium of water and slime may be calculated. From many experiments made by myself in three or four



rivers in Tuscany, it seems to me that those waters most proper for warping contain a body of slime in a proportion of one part to thirty, or one to forty of the water the least loaded with slimy particles. When the mud is in a less proportion than one fortieth part, the warping will take more time before the effect ensues. Every one, by the means of such experiments, can convince himself that the mud extracted from the Arno is sufficient for a good warping, and therefore there is no ground for the complaint respecting the clearness of the water.

Much less grounds can there be for the second objection, against the irregular and meandering course of the Arno, which alledges that it is inadequate to the purposes of warping. I am inclined to think that such persons have never seen the experiments made, and have thought that it is necessary to alter and change the course of the river at their pleasure. Nothing of this kind is necessary. There is no occasion to modify by any regulations a river which flows in fulness of itself; and nothing more is necessary than a spacious canal, sufficient for an extensive warping, which, when compared with the remaining body of water, will not be one thousand or two thousand parts of the whole. It will be sufficient that the sluice for such a warping be well guarded with stones, or strong fascines, that the water may

run out quietly without risk of any accident, as may be observed at the two apertures at Montecchio, where the proper barriers have been erected with stones, which have guarded against every irregularity of the river with the greatest success.

#### ARTICLE SIXTH.

*Cases and Circumstances most favourable to warping, in Opposition to mere Embankments.*

It is necessary to relate the circumstances in which the opening of the banks for warping takes place, which, elevating the ground to a proportionate height, renders useless the effect and expence of these embankments; and to proceed with perspicuity, it will be necessary to distinguish these floodings into *closed* or *open*, or, according to others, *dead* or *vivid*. The *closed* or *dead* flooding is that where a body of water, being introduced, is left stagnant, provided with proper sluices, that when the slimy sediment has subsided to the bottom, the water may be let out and returned to the river after the high floods are over, or conducted through channels prepared for it's passage. On the contrary, the *open* floodings require a continual current; which, entering at the apertures destined for the flooding, fall afterwards into the river again, or

into any other recipient. The first flooding is certainly more tardy, and the second more rapid; but the former has the advantage of less expence, a greater facility, and of a more general nature than what appertains to the open warping.

In speaking of the first, there are many frigid lands which, bordering on a beneficial river, are susceptible of the *closed* or *dead* warping. Whatever may be the surface of such steril ground, whether great or small; whatever may be the reciprocal relation between the bottom of the river and the barren fields, with respect to altitude; and finally, whatever may be the distance of such fields from the bed of the river, a *dead* warping may always be obtained, more or less rapid, in proportion as the overflowings of the river are frequent and replete with fecundating substances.

Let it be supposed that the volume of mud be to the body of impregnated water in a proportion of one to forty.

That the altitude of water flooded on the adjacent ground be two braccia.

That the floods in a medium year may be calculated about seven in number.

Every one knows that the fortieth part of two braccia is only one *soldo*. The floods being seven, the ground may rise to a level at the rate of seven *soldos* the first year. If, therefore, the

ground should be raised two *braccia*, this will happen in the course of six years ; in which period, without losing the fruits of the soil, but rather gaining more than when in a state of sterility, it is of no consequence that to raise it to it's required altitude six years may be wanted. The solution of this problem has been thus stated by me to render it intelligible to the multitude ; but I cannot deny that the case is not absolutely so, because in proportion as the floodings elevate the surface of the fields, the waters introduced are of a lesser altitude. Supposing even permanent the level of the floods, and also their number, the depth of the water on the surface of the fields will always be less ; less of course will be the matter deposited at the bottom, and consequently more time required to complete the flooding. If the possessor be deprived in part of the fruits of the earth, he may reap the benefit of suspending the work, and collect in two or three years such abundant crops as will make amends for any of scarcity. This is certainly the advantage of the dead warping—that you may regulate it as you please, by intervals of flooding with years of culture, elevating the ground a little at a time, until at last to the height of the sluice of the principal river, the case on many lands in the district of Pisa, respecting the bank and the river ; and as long experience has de-

monstated that plains are more fruitful by being more abundantly refreshed by the fertilizing slime of rivers, it will thus happen with our warping, and successive embankments will raise field after field, placing the second, &c. at a greater distance from the river; and thus proceeding from flooding to flooding, the river will refresh the country with a deep rich soil, which will give double substance to whatever grain is sown therein. I shall state a particular case of a *dead warping*, and calculate the mode of proceeding, with the difficulties attending the same.

The annexed plate, fig. 1; will in the first place shew the course of the fertilizing river at the letters AAA. The left bank, which confines the river, is represented by BBB; and the right bank CCC, where we suppose a barren spot of ground. It's contiguity with other fields is expressed by letters DDD. Let EEE be the drain, which is supposed to discharge itself, after a long course, into the lower part of the river; and provided with a sluice, FF, which, as is known, should be well closed in all the overflowings, to await their subsidence.

To prepare the aforesaid frigid ground to receive improvement, let a small bank be constructed all along it's confines at GGG; it's height to be two *braccia* and a half, the basis to

be five *braccia*, and the breadth of it's summit half a *bruccio*.

Such lesser banks should be connected with the principal bank of the river, that the water should not run over sideways.

At the intermediate point of the bank which commands, as it were, at equal distance, the sides of the ground, a small sluice should be established, HH, which ought to be well constructed in the usual way; the dam of which should be on a level with the low water of the river, in order to take advantage of any flooding. The breadth should be moderate in proportion to the extent of ground to be warped.

Therefore, in the present instance, supposing the ground to be 200 *stiora*\*, the aperture will be fifteen *soldi*, and in other mensurations may be increased in a ratio of the surface, taking notice that too extensive grounds to be warped may be avoided by dividing them into two or more parts. In order to introduce the water into the fields at the warping, it will be necessary to contrive a ditch, III, in a curved form, and divergent, that is with it's mouth towards the river, and considerably larger than the apperture

\* The *stiora* varies from five and a half to seven to the English acre.

A. Y.

of the sluice, intended to obtain the water in greater capacity, as best suited for it's effect on the ground to be warped.

A second sluice, equal to the first in breadth and height, ought to be erected at the opening of the drain, indicated at the letters LL.

The mechanism of the aforesaid sluice should be so contrived as not only to open when it is high water, but to be shut again at any time when the whole of the ground to be flooded is effected.

The earth should be taken from the inside, and not from the outside, to make the embankment; and by doing thus the first effect of the flooding will be to fill and equalise the various empty cavities.

If the undertaker of the warping wish to raise his surrounding bank at once to the height of the principal bank of the river, then the height would be too considerable; and therefore I would propose rather to raise it a little at a time, according to the increase of the flooding; and in such case the expence will be less than in making it all at once of it's total height.

On the inspection of this particular case every one may deduce the following consequence, which is of great importance.

1st. Wherever an advantageous river runs through a barren country, by surrounding the

ground by degrees, time after time, it may be ameliorated and rendered more fertile.

2d. By making a canal from one warped land to another, such works may be extended to a greater distance from the river.

3d. That the expence of such warping cannot be deemed excessive.

4th. That such an operation may be interrupted to obtain a greater quantity of produce, and then recontinued.

Finally, extending such flooding at different periods to remote parts, all the newly-acquired soil may be converted into plains, the early banks destroyed, and the whole laid open to the beneficial alluvions of the river, which will spare to the owner the expence of manure.

Having now shown the advantages of the stagnated warpings, we will pass to the live ones, which differ not much from the others.

#### ARTICLE SEVENTH.

*Of the different Circumstances of the running Warp, and the Result therefrom.*

The live warpings, which are in continual action by the motion and changes of running water, ought to be divided into two sorts, which differ considerably from each other. The first are susceptible of all the water from a torrent



which may run near a barren or marshy spot ; the second can only reap the benefit of a very small portion of a large river which meanders near it. The first are more benefited by the waters of the river, which they receive entirely ; whereas the others may receive a greater or less quantity, in proportion to the ground to be flooded. The first are frequent in the Valdichiana, there being as many torrents from the principal canal as there are ponds on the estate belonging to the knights of St. Stephen and in that part which belongs to the Grand Duke. The rivers Foenna, Salarco, Salcheto, Mucchia, Esse di Cortona, Esse di Foiano, and other less streams, are all employed in so many pools that, by the plenitude of their waters, they may raise and fertilize the barren spots on the lowest level.

They make a moderate use of banks in this province, for, excepting some few on the farms to prevent the overflowing of the principal canal, all the others are employed to turn aside the rivers, and make them discharge into the pools, or to surround those made to retain and deposit the slime of the water ; and these same banks, when the flooding is completed, become a plain surface, and totally useless for the defence of any ground.

VOL, XXXVII. No, 213. E e

The circumstances requisite for the running warp are, in the first instance, that the materials brought with the torrents should be of a fertilizing and nitrous nature, as those of the Valdichiana generally are.

Secondly, That the situation of the river should be favourable to produce the effect of flooding the ground, as every one will understand that the rivers on too low a level may often have pernicious effects in being raised sufficiently to cause a good flooding where wanted. Losing thus a part of their fall, the remaining declivity is scarcely sufficient for the inclination of their course ; thus the waters regorging backwards, may do a great deal of harm to the fertile lands where flooding is not wanted. Therefore it is the business of an expert hydraulick to take an exact level and settle the true fall of the river, and establish, in consequence, the height of the ground to be flooded, and measure the length and proportions of the line of the river, in order that all these principles, being justly combined, the proper circumstances respecting the flooded ground may be ascertained, and when the circumstances are favourable, to point out all the particulars.

In the third place, it is necessary to observe, when the waters for flooding ground fall in marshy places, whether the grounds be sus-

ceptible of embankments, not that we are ignorant that many pieces of ground are rotten; these are nothing else than a collection of marshy peats, &c. which falling successively one upon the other, with the long lapse of ages, have caused a fragile and unsettled soil, which fragile foundation the banks erected have, by their weight and pressure, in great part or totally destroyed. The accident is famous which happened in a valley in the Bolognese named *Gadaxzuolo*; where an attempt having been made to form a new embanked canal named *Benedittino*, the right embankment, when the canal was finished, soon gave way, and sunk in such a manner that in a short time not the least remnant was visible.

Another physical condition requisite for warping grounds of this nature, is the certain proportion between the surface and the size of the river employed for the purpose; for if the whole is to be introduced, anybody may understand that the land to be warped being too narrow, and the water rushing over it, has not time to deposit the smaller particles, best adapted to fertilization; from whence it follows, that, depositing only the grosser materials, chiefly sandy, instead of a fertile soil, they will only acquire, at a great expence, a barren and sandy surface, while the earthy particles are carried off. The

contrary effect will happen to another flooded ground of an excessive surface, with respect to the body of water, which depositing all it's materials in one part, leaves the other poor.

All these circumstances occur, fortunately, in almost all the rivers and torrents of the Valdichiana, as they run in a sandy soil, and have a sufficient fall to enter a ground fit for flooding. The soil is everywhere frigid or marshy, but of some consistence. In all places the ground will admit of being divided into two or more parts, to render it better proportioned to the body of water and it's warp. I do not say but that in some cases some of the before-mentioned circumstances may be wanting, either from a defect in the ground or want of method. The flooded ground named *Bettole*, made from the river Foenna, was at first at a great distance; but by subdividing it, it has been effected. It's embankment parallel with the principal canal has been much lowered, but might have been raised again. The pond of Foiano is rather too narrow, when compared to the size of the river Esse; but it has been intended, and is still the intention, to unite a second pond to the first, which will shut in all the earthy particles of the first.

But leaving general ideas, to revert to particular

instances, and applying them to the pond of Foiano, let us explain the physical state of a running warp and full river.

Let this be done by fig. 2. in which the warp pond of Foiano is shown by the plan. This flooding is performed by the waters of the river Esse, which are discharged into it when the waters are high. Such a river has a sufficient fall from it's higher situation to convey all it's warp to the destined place. If such a fall were wanted, one of it's principal qualities would be wanted also, since, under such an hypothesis, the slime, instead of being carried on and forming the alluvion in the destined place, would be deposited in the course to form the fall, consequently the pond would never be filled up.

This pond is surrounded, as usual, by embankments of 1,080,833 *braccia*, Florence measure, which make nearly 625 *stiora*. And although the water ought to rise to a certain height for flooding, still the river Esse supports such a swell without overflowing, which is a second condition of this pond.

Here the first sluice was rather too high; and thus the waters swelling too much, they overflowed the lower embankment at the first breach, which was constructed by the monks of Foiano to shut in the circumference, but, owing to the rupture, no longer received the waters of

the pond ; and from such an accident follows the third condition, that the lip of the sluice should be established of such a height that the enclosing banks should not be overflowed, and much less those of the river whose waters run into the pond.

They therefore lowered the first sluice and added a second, to procure a lower and quicker discharge, as the river Esse runs with such fullness and rapidity that the first was not sufficient. In fact, the river made a second rupture in the bank, which was shut in by the second reparation.

The discharge of these waters, as well of the first as of the second sluice, had their effect on the low meadows or commons, and then lost themselves with other waters in the grand canal. This, then, constitutes the fourth condition, that there ought be a sufficient declivity of ground under the sluice, that the water should not form any lodgment, to the detriment of the lands.

The good effect of this pond has been retarded considerably by these ruptures in two parts of it's circumference, since not only no fresh fertilizing matter was deposited, but the rapidity of the current even carried away what they had obtained before.

The extent of the river is such, that the dimensions of this pond have appeared to many

good judges to be too confined. In fact, the materials they receive are too sandy ; but if such an inconvenience do exist, this will be remedied by the introduction of more fertilizing materials when a new lateral enclosure will be constructed for a new pond. They will convey the superficial parts of the high waters, which, perhaps, are the most proper, and form the most fertilizing alluvions.

Such a mode of proceeding, which is necessary on the present occasion, may be adopted with still more profit in other more extensive ponds, where, by the means of *cross ditches*, they conduct the most minute alluvions, to correct and refresh those parts where the first discharges of the torrent have amassed sand mixed with a certain portion of the soil.

The conditions already laid down for a running warp and a full river are not difficult to be met with, as, in fact, they are observed in many ponds in the territory of Valdichiana; and therefore the custom of flooding by such a method is not subject to so many difficulties as by many have been imagined,

## ARTICLE EIGHTH.

*Circumstances and Cases wherein warping may be done by the Overflowings of great Rivers.*

In speaking on this subject, the first necessary condition will be, that the lands first warped should be contiguous to the river, since, if they were distant, a long canal would be necessary, which would be very expensive, and, perhaps, render it's utility dubious, as has happened to that on the lands of Calcinaia. Meantime it would be more proper to begin methodically on lands adjacent, and then proceed to others more remote, as has been already stated.

The second condition will be, that the waters, continually running in a live warping, should easily discharge themselves into some kind of recipient, whether it be a lake or a lateral torrent, or the very river itself in places lower down, where a declivity will always be furnished whenever such as these two first receptacles fail. It may always convey, with some degree of power, the clear water to some given lower point.

To form a true conception of this theory, it must be remembered, that the running waters of all rivers have a declivity, which is more or less, according to the column of water, and the



greater body of slime and materials it is able to convey along with it. Be it remembered also, that the greater the power of the column of water in a river, the less will be the declivity required, compared with it's materials ; and the greater the bulk of such materials, the more they will require a declivity in the channel, as have been shown in the theory of rivers.

The third condition, concerning the length of the warping ground parallel to the course of the river, which if too long, will be in part useless for the deposition of impalpable materials, and if too short, the water will not have time to deposit, but will be carried on and lost in the recipient ; it is not, therefore, easy to ascertain the proper limits of length, which depends more upon practice than theory ; still something may be added, according to experiments made in the territory of Pisa,

The fourth condition will be, that in proportion to the amplitude of the ground, one or more apertures may be opened to discharge the river, according to the expansion required ; and in the same manner, lower down, a sluice may be established, in proportion to the water to be emptied into it.

When these circumstances and cases occur, it remains demonstrated, that in such parts of the river, warping enclosures, well regulated, may

be established with such dimensions and works as may suit such a river and such lands ; and it may be taken for granted, that the greatest difficulty in such an hydraulic undertaking will consist in the most exact and true application of the general principles to particular cases. Here the skill of an intelligent engineer is required, since the bad effects of ignorance might render the work of infinite prejudice when undertaken improperly.

Having demonstrated, in a similar manner, the circumstances most necessary in a warping dependant on the command of any river, nothing remains but to particularize and describe a given example, which occurs to me, in the already-mentioned warping of *Montecchio* ; relating to which it would be advisable to consult the first reports, and rules by which it was established and continued with the most happy success that could be wished for : but the present question not being to form such an one, but only to describe it, I shall confine myself to giving an extract of the first reports relating to it ; and, secondly, delineate it's different effects which have happened until the present time.

## ARTICLE NINTH.

*The Warping of Monteccbio, it's Dimensions and Effects.*

In describing this undertaking, the representation will be necessary. The letters AA represent the first superior mouth, and letters BB denote the second mouth. The river Arno, which flows from Usciana, in a manner surrounds the whole farm in a serpentine direction.

These two mouths are each of them twenty *braccia* in breadth, and provided with palisades or fascines, as is customary. Such a guard is more particularly necessary at the first mouth, on account of the more violent percussions of the river Arno in it's higher part; for which reason it was deemed proper to strengthen the palisades with other impediments, consisting of stones, without which the force of the river might destroy this mouth, to the great prejudice of the farm.

To guard against such a danger have these strong erections been made at the first mouth; but such was not necessary at the second, BB, as may be observed in the plan, because the pressure of the river in that point was only in equal proportion with the opposite side.

Lower down, at the most convenient point, the sluice, CC, is placed, which is forty *braccia* in breadth, being double the dimensions of the two mouths.

The letters FF shew the general drain of the farm ; and at it's lowest point, the discharge, EE, which first enclosed the overflowings of the river. Near the said drain runs the river Nero, laterally to the farm, indicated by GG ; and lower down is the discharging sluice, DD, by the said river.

The great extent of the farm did not admit of the operation of equally warping every part of it ; and it has been observed, that the flooding of the river, and laying on it's water to the distance of about 4000 *braccia*, have already deposited the most copious mud.

The works being prepared as before mentioned, they were opened in the winter of 1772, and the following consequences ensued.

The river being introduced, the effects of the warp soon took place on the lands nearest to the mouths, and more slowly on the lands at a greater distance, as far as the point of the sluice, CC ; and according to observations made, it seems that this warping might be calculated at the extent of from 4000 to 5000 *braccia*.

The sluices were kept open, during the increase of the river, from the month of October

until February ; and then the two mouths of the embankment were shut, to preserve the second crops from the increase at the new high-water flood of the river.

These lands were abundantly sowed with vetches, maize, and millet ; which thrived amazingly, to the great profit of the Carthusians of Pisa, to whom this farm belonged.

The height of the new soil was in some places three *braccia*, in others two and a half ; but suffering degradation in proportion as it came near the discharging sluice, where it was only considered about one fourth part of a *braccio*.

The better to flood those grounds near the discharge, it is intended to open a third mouth.

#### ARTICLE TENTH.

*Of the Circumstances of those Places where the Use of Embankments is not only advantageous, but necessary.*

We may arrange under three heads the local circumstances affecting lands near rivers, where it will be useful, as well as necessary, to speak in favour of the system of embanking. Under the first head we may include all we have said where the waters run with ease into a commodious and low recipient ; as the lands are not incommoded by floods, and where the soil is at-

ways rich and fertile, and fit for vegetation. Therefore I cannot believe that the prejudices for warping would be met with where the expence of making them would be useless. To cover over with water a fruitful soil not in need of it, is contrary to the rules of husbandry.

The second case happens frequently, and that is when the waters of any neighbouring river are in a manner limpid, and have no fertilizing slime, which alone require the opening of the banks. What will it avail to choak up still more a soil already frigid with the addition of a superficial irrigation? Nothing, but to render still worse what was bad before.

The quality of the rivers should not be omitted; turbid, perhaps, but yet prejudicial to the fertility of the soil. Torrents are not wanting which have no other merit than to contain gravel and sand, as we observed of the *Zambra*. Other torrents are not wanting which are replete with barren sand, mixed with the slightest portion of earth. To others nature has furnished an earthy substance of a yellow or reddish colour, equally prejudicial to the soil as sand itself. In many parts of Tuscany I have observed such torrents, but none have surprised me so much as those of the river Nero, near the farm of the Carthusian monks of Pisa, which descend from certain hills of reddish earth, and seem at first well adapted for

the purpose of warping ; but it is deemed better to let the soil remain in it's natural frigidity than expose it to be covered with the water of the aforesaid torrent, which would totally destroy it by depriving it of it's slender pasturage.

The aforesaid three circumstances, or modes of embanking, are in use in Romagna, with respect to the *Po di Primaro*, also in the *Po grande*, in the greater part of it's windings ; and that because it's overflowings proceed from snow which becomes melted by the great body of water. Finally, these cases occur in many rivers falling under the circumstances of the three cases above mentioned. Under such circumstances, who can deny the utility and necessity of the embanking, intended to rid the soil of water destitute of fertilizing matter.

The consequences, then, of all these articles, as already demonstrated, will be, that in general the use of mere embankments cannot be approved of.

Likewise, that warping is not practicable in many cases.

That there are cases and circumstances where the method of embankment should prevail, and also others where we should prefer the system of warping.

Finally, adopting the one or the other system

with proper discernment and prudence, according to the situation of the ground, the nature of the intersecting rivers, and the principles of economy and good husbandry, a judicious system, partaking of both methods, may be introduced, either with embankments or warping, which may finally result in favour of agriculture, and to the benefit of the state.

Such, according to my opinion, should be the answer and solution of the problem respecting the system of embankment, avoiding excesses on both sides, according to that golden maxim—

*Inter utrinque tene.*

---

### DEVONSHIRE CATTLE, &c.

**A** CONSIDERABLE experiment on this breed of cows has been made by Mr. Conyers, at Copt Hall, near Epping. He has been for some years in that breed, contrary to the general practice of all the neighbourhood, the Epping dairies consisting of all sorts of cows, without preference for any particular breed, the long-horned Derby, however, prevailing rather more than any other sort. He prefers the Devons on account of their large produce, whether in milk,



butter, or by suckling. They hold their milk longer than any other sort he has tried, are liable to fewer disorders in their bags, are of a small size, and do not eat more than half what cows of a larger size consume; and though he has had them some years' breeding, his own stock finds no decline. One of them, six years old this year (1800), fattened her own calf, which went off the 10th of August at 7l. 15s. and now gives three quarters of a three-gallon pail of milk at a meal. Had another calf been put to her when her own went to the butcher, would have added between four and five pounds to the real value of it; perhaps full five pounds. His year's produce for 1799 was, on thirty cows, as follows:

	£.	s.	d.
Sold 44 fat calves - - -	217	16	6
Milk, &c. to the house, reckoned for half a year at 6d. and half a year at 7d. per gallon - -	153	12	1
Weaned four calves - - -	9	0	0
Eight in the bins at Christmas, at 4l.	32	0	0
	<hr/>		
	412	8	7
Bought 23 sucklers - - -	41	15	6
	<hr/>		
By 30 cows - - - -	370	13	1
Per cow - - - -	12	7	0
	<hr/>		

VOL. XXXVII. No. 213. F f

The account is very favourable for such small cows as these. Some uncertainty in point of accuracy will, however, attend the circumstances of family consumption. Five pounds a cow of this produce is thus accounted for.

In point of food, their pasture is narrow; 31 cows have been this year summered on 48 acres, their regular food every year from about the 10th of May till the end of September; then turned into the lawn of 100 acres for about four weeks, which is about equal, by estimation, to the food which sheep and horses have in the cow pasture of 48 acres; 36 acres of rowen then receive them, which, with a load and half of hay per head, the produce of one acre, completes the winter food. The year's account, therefore, for thirty cows, stands thus:

Summer food 48 acres, or rather better than one acre and half per head.

Forty-five loads of hay, the produce of thirty acres; six acres of rowen, besides that of the thirty mown.

Summer	-	-	-	-	48 acres.
Hay and rowen	-	-	-	-	30
Six ditto, call it half	-	-	-	-	3

---

Two acres and two thirds per head      81

---

There are near Epping thirty acres of grass

which have carried twelve cows more than once through the year. This is two acres and a half per head.

Mr. Conyers's young cattle and dry stock eat straw in the winter.

This breed, which Mr. Conyers finds thus beneficial, he has taken much pains to introduce among his numerous tenantry, but they do not like them enough to make a trial; he has offered them calves, in exchange for their own, but they reject them for want of bone. The Derby and Welsh are preferred. Suffolk pigs also were spread amongst them, but they were all killed, as far as I could find, for no better reason than because they did not become fat, and (I suppose) did not breed.

About Epping, a common method of managing the pigs of a dairy is, not for the farmer to breed them, but to take in joist ones from jobbers and others, who give from 3s. 6d. to 5s. a week for their feeding on the skimmed milk. No other food makes such fine, well-flavoured, firm pork; which boils away so little as scarcely to make the water greasy (their own expression): but it is so binding a food, that precautions are sometimes necessary in feeding, or the pigs die of the fever; to remedy which they sometimes, at first putting up, give a little pol-lard, in order to prevent costiveness.

Their cows in general consume each a load and half to two loads of hay, nor do they give them any straw unless they have rowen to eat with it ; holding it very bad management to let their cows down in winter, for they lose much of the summer in recovering it.

Mr. Jenkin, some years ago, made various observations on the value of butter paid by hay ; and he could never find that a truss of hay would pay more than 1s. butter being at 10d. per lb.

Sir H. Mildmay has for some years been in the breed of Devons, after trying various other sorts, and he prefers them to all. He has two bulls, nineteen cows, seven fattening, twelve working oxen, and fifty-one young cattle, in all ninety-one head, above eighty of which are Devons : this is making the experiment on a great scale. His oxen work well ; I saw two ploughs of them, which moved as fast as his horse ploughs. The fattening quality of the race is well known, and in the dairy they are fed better than any he has yet tried. All this is satisfactory. The land, though good, is not of the first quality ; so that much larger breeds would not, it is conceived, be equally beneficial.

### SHEEP FEEDING.

**MR. WALKER**, of Eaton, in Bedfordshire, has found that nothing is so beneficial in feeding sheep on turnips, by way of addition, as pease; a small quantity, as two or three bushels a day, to 150 wethers, will have a considerable effect; and the benefit to the land is uncommon, it will be seen in the barley to an inch.

---

### SHEEP FOLDING.

**MR. STYLEMAN**, of Snettisham, in Norfolk, upon a farm of 1800 acres, never folds; and is well persuaded that it is not at all necessary.

**Mr. Overman**, of Burnham, never folds; and finds that his lays, when he breaks them up for corn, pay him amply for leaving the sheep at night where they feed by day.

**Mr. Coke**, of Holkham, folds no sheep, and finds no want of it; keeps a greater stock than he could do with it, and finds his lays equally *tatbed*.

Mr. Reeve, of Whiting, has given up folding, and some others in the neighbourhood of Holkham.

---

### SHEEP.

**T**WENTY-FIVE years ago, Mr. Crowe, of Ash Wicken, South-Down ewes, ordinary ones, went with Norfolks; and on Leziate heath, a very poor tract, they did so much better, that he determined to have no other. He took away the Norfolk rams, and used South-Downs, by which means he became gradually to have a South-Down flock on the original basis of a Norfolk one. The rams were by no means of the best kind, even at that time, for they were bought in Smithfield market. After some years' experience, which satisfied Mr. Crowe of the goodness of the sort, he sent to Mr. Ellman, whose fame then began to rise, to send him four of the best rams that could be had, and for which he paid the then high price of five guineas each. With these, and the best ewes he could collect from his flock, and some of the best Norfolk ewes he could procure of Mr. Prick, of Hargate House, giving him thirty guineas for picking ten ewe

lambs out of those he had saved for himself\*, he then rejected all his own, finding nothing did so well as these Norfolk ewes with South-Down rams; and from this stock he made his flock, till eight years ago, when he gave another cross by a Leicester ram from Mr. Coke's, who gave leave to choose one that suited Mr. Crowe's particular purpose. Took twenty best South-Down ewes thus formed, and in which the Norfolk form was almost entirely worn out. Not that he would wish entirely to get rid of all Norfolk properties; for instance, Mr. Crowe particularly specifies the depth of flesh along the chine and back, and along the vertebræ, in which he thinks they exceed all other breeds. Also the depth of carcass immediately behind the shoulder, measuring to the bottom of the rib bone; not the circumference, but side depth. The length also of frame he thinks better than that of South-Down. After these three points, all is a blank, except the inside fat.

Observes here, that it was breeding greyhounds which gave him the idea, to conviction, that he could breed, with attention, so as to transfer any point desired without taking the bad ones;

\* In this transaction Mr. Crowe is persuaded that it was not money which tempted Mr. Prick to part with them, but his good temper in yielding to earnest persuasion.

and has observed that he can do the same thing with sheep.

Objects to the idea of the roundness of barrel in the Leicesters being such a perfection as some imagine ; if round, they want *depth*, as explained before ; and that bellies need not be tucked up for having light offals, will be seen in the comparative weights of two experimental sheep killed at Holkham in 1799.

We come to the cross of Leicester : that ram was put to twenty ewes, the longest, straightest, widest, and deepest he had. He was satisfied with every point he had, except thickness ; and also aimed at adding to the weight of wool, as well as to improve the disposition to fatten, which had been supposed still a little injured by the remnant of Norfolks. The best of the rams the produce of this cross were parcelled out among the ewes according to their respective points ; and thus proceeding, he has never failed of improving every year. The rams were continued thus to be sorted, in order to get rid of the Leicester blood, as he had before done with the Norfolk ; so that at present he conceives that there may be in his breed about one thirty-second part of Leicester blood, and about one sixty-fourth of the Norfolk. He has had no cross since that from Mr. Cook, and intends breeding entirely from his own stock. As to what



the breed is, the land that supports them is the best proof. He has now

- 23 rams
- 226 breeding ewes
- 94 shearling ditto
- 30 shearling wethers
- 42 ram lambs
- 228 ewe and wether ditto

---

643 fed upon 71 acres of pasture and 21 acres after mowing. Also 29 shearling wethers sold May 14th, five crones killed in harvest, and three died; one cow and two heifers fed on the same land, and food on the ground now increasing.

With the grass on the pastures, the feed of 60 acres of stubble, and 20 acres of good turnips, Mr. Crowe expects to keep all this stock till the 5th of April. Seven tons of hay have also been mown from the same land.

They have had from the 5th of April 71 acres of old inclosed pasture land, worth, free from the vicinity of a great town, 20s. an acre; 20 acres of clover and ray, after mowing; and there is now plenty of food on the land. In the winter they had 32 acres of turnips, no hay, these supporting them from Michaelmas, and the 71 acres they are on. In a general way, 32 acres of very good turnips, with the feed of 91 acres of grass, would carry them through the winter.

They have the stubbles of 60 acres of corn\*. The land is very much improved by feeding with sheep; so much, that though only one mile from Norwich, he has not, for 12 years past, brought any other manure than what arrived from the sale of straw, in the proportion of nine twenty-four-bushel loads for one waggon load of straw; and never 20 loads sold in a year.

He used to keep 40 cows here; and when he changed to sheep, his bailiff said, *But, Sir, what shall we do for want of muck?* He was a great enemy to the change on this account; however, he is now convinced of the superiority of sheep in improving land. By sheep feeding, ray grass and white clover have stood well on a gravel hill nine years, and have been constantly improving.

*Account of a Two-Shear Wether of Mr. Crowe's  
killed at Holkbam.*

					lb.
Weight alive	-	-	-	-	189
Blood	-	-	-	-	8
Entrails	-	-	-	-	12½
Head and pluck	-	-	-	-	12
Skin	-	-	-	-	8½
Tallow	-	-	-	-	17½
Waste	-	-	-	-	1
					<hr/> 59½
Mutton	-	-	-	-	<hr/> 129½

\* Very clean, for very few weeds on the whole farm.

If 189 lb. give 147 lb. mutton and tallow, what will 20 lb. give? Answer,  $15 \frac{10}{189}$  lb.

At the same time a New Leicester three-shear wether was killed. lb.

Weight alive	-	-	-	-	210
Blood	-	-	-	-	$7\frac{1}{2}$
Entrails	-	-	-	-	$13\frac{1}{2}$
Head and pluck	-	-	-	-	$10\frac{1}{2}$
Skin	-	-	-	-	$11\frac{1}{2}$
Tallow	-	-	-	-	$14\frac{1}{2}$
Waste	-	-	-	-	1
					<hr/> 58 $\frac{3}{4}$
Mutton	-	-	-	-	<hr/> 151 $\frac{1}{4}$

If 210 lb. give  $165\frac{3}{4}$  lb. mutton and tallow, what will 20 lb. give? Answer,  $15 \frac{10}{210}$  lb.

Mr. Crowe's, as a *two*-shear, against this *three*-shear, has evidently the advantage. In entrails they are on a par. In pelt, to be proportioned to Mr. Coke's, Mr. Crowe's should weigh  $10\frac{1}{2}$  lb. instead of which it is only  $8\frac{1}{2}$  lb. Here it has the advantage.

Mr. Crowe's ewes clip 6 lb. on an average, and were sold in 1799 to Mr. Fincham, of Diss, for 49s. the tod. Norfolk selling at 52s. and South-Down at 55s.

He sells his wether lambs in the spring before shearing. Has sold them at 38s. in April, some shearling wethers at 56s. and some up to 4l. 4s. This was in 1799.

## COPPICES.

**T**HE culture of hops in the vicinity of Dogmersfield, the seat of Sir H. S. I. Mildmay, makes wood for poles so profitable, that it is a branch of husbandry which has been pursued by that able cultivator with much vigour and a corresponding success. He has cut them to the value of 25*l.* and even up to 30*l.* an acre, at 11 years, growth. The common price of poles of 18 to 21 feet in length is 3*d.* each, and poles of 25 feet will sell even at 6*d.* a pole; but such are used only in the finest hop grounds at Farnham, of 10*l.* an acre rent.

In the culture of his coppices Sir H. is uncommonly attentive, and his success is answerable to his exertions. First he trenches the ground a spit and half deep, forming it into beds six feet wide; the trench two feet, throwing the earth into the beds. Then he sets two rows of plants on each bed, each row at a foot from the edge: two plants on a hill, at three years' growth, from the nursery: trimming the roots and cutting the stems to two inches from the ground. The poor people are then permitted to plant potatoes, two rows between the trees, and they get 200 bushels per acre. This they con-

tinue to repeat as long as they please, usually for four or five years. The plants are cut at five years, the value about pays the expence of cutting. Then the poor take one crop more. At nine years they are cut again, when the poles are worth 23s. per hundred on the spot. This method he has found to answer perfectly.

				£.	s.
Expence.	Trenching	-	-	4	0
	Sets -	-	-	4	4
	Planting	-	-	0	10
				<hr/>	
				8	14
				<hr/>	

In ten years they are cut again, and then all expences will be paid with profit.

Rent is various, but very low in general, as he has planted many waste and neglected spots and corners, some of which were of very little value.

Every circumstance of the method here described has been founded on many experiments: He has coppices on the same soil, contiguous, and planted at the same time, but part trenched and part not ; and the prodigious superiority proves that this management is essential to success. Twelve years ago he formed a plantation without trenching, and to this day they are good for

nothing. A coppice of Spanish chesnuts, and red withy, looks as if it had been planted at three distant periods, but it was all at the same time ; the difference is the result of one part having been cultivated under potatoes five years from planting, another part three years, and the third only one year. Such is the immense difference, that no person can view it without considering the result as demonstration. All was trenched.

There is a plantation on a lower ground than that just mentioned, of red willow and ash, trenched and formed in the spring of 1799, and cultivated under potatoes, the growth of which is prodigious : some of the ashes are twelve feet high.

In respect to the sort of pole, ash and red willow are best, which sell at 7s. a hundred higher than any other. They also thrive much the quickest ; but red willow, on the whole is so superior to the ash, that he intends in future to confine himself entirely to it. The soil is either boggy or wettish sand, but all his soils do wonderfully for trees. There is a shrubbery which joins the house, spreading over a hill which slopes two ways, and commands very different but pleasing scenes ; well worth examining, for the vast growth of the trees in only eight years.

The vicinity of hops renders this application of the land the most beneficial to which it could

possibly be assigned. The experiments have been made with considerable attention ; and the various results, according as the above method has been adhered to or departed from, furnish a very rational and well-founded system of experience, which those who intend to form coppices will do well to consider before they begin their operations.

EXPENCES OF A FARM IN NORFOLK.

**E**IGHT hundred acres : '660 arable, 140 sheep-walk. Rent, 530l. tithe free. Capital, 4800l.

	£.
Interest of capital - - - -	240
Rent - - - -	530
Rates - - - -	130
Wear and tear - - - -	100
Seed - - - -	180
Twenty-eight horses, at 15l. - -	420
Labour - - - -	500
	<hr/>
	2100
	<hr/>
Suppose the profit five per cent. - -	240
	<hr/>
	2340
	<hr/>

- Course. 1. Turnips.  
 2. Barley.  
 3. 4. Clover, &c.  
 5. Wheat.

If the barley produce eight coombs, and the wheat five, per acre, the account will be,

132 acres at eight coombs, 1056 coombs;	£.
which, at 12s. is	633
132 ditto wheat, at five coombs, 660	
coombs; which, at 24s. is	792
264 seeds	
100 sheepwalk	
40 pasture	

---

404 must produce, to make up 234ol.

45s. an acre	909
--------------	-----

---

2334

---

But as the grasses will do no such thing, the corn must be higher.

### LACE MAKING.

AT Sheffard, in Bedfordshire, there are many lace makers, who earn much more considerable wages than any thing our spinners of wool



experience in Suffolk: a very good hand will earn nine or ten shillings a week, a middling one 4s.: children begin at six or seven years old. Platting straw in the Dunstable wares is coming in. It is remarkable, that poor rates at Sheffard, which is a town, are at present, in this severe scarcity, only five shillings in the pound, not having been raised by these bad times above six pence. Does not this seem to speak the advantages of this fabric? Wycombe, in Buckinghamshire, is almost exactly similar in this respect. Clophill is a very populous village in Bedfordshire, lace the employment, and poor rates at present but five shillings.

Many persons have informed me, that the girls brought up to this business are helpless, and good for nothing else; that they earn so much, if good hands, that they will attempt nothing else, not even to wash their own linen: and all this in a strain of condemnation. Such observations are astonishing. By application and consequent excellence they arrive at a degree of skill which gives them from one to two shillings a day; but suppose only a shilling: to abandon all except the main object of their industry, is just what we commend in every other pursuit. Then why not in this? *But they are so ignorant, that they make bad servants; they do*

VOL. XXXVII. No. 213. G g

*not know how even to sweep a room.* So much the better, you would hire one in ten for house maids. Would you keep nine idle, to supply the tenth? Such objections are preposterous. At Lidlington poor rates are risen to 4s. in the pound in the period that has quadrupled their population. Go to the spinning countries, inquire, and make the comparison.

---

#### RICE USED BY THE POOR.

THE parish of Wymondham, in Norfolk, sold in the present scarcity to the poor, at the reduced price of two pence per pound, 18,687 pounds of rice: the population is about 3200 souls. Now if that number would buy 18,687 pounds; ten millions, we may fairly suppose, would have bought an equal proportional quantity, if they could have had it, which is 58,396,875 pounds. They were very thankful, and much approved of the consumption, having found it a hearty, nourishing, wholesome food.

### RIVER WEEDS.

**M**R. CROWE, of Norwich, manures four acres annually for turnips with the weeds of a river that runs by his farm; the plants are chiefly *phelandrium aquaticum* and *sium odiflorum* (water hemlock and water parsnip). Lays 20 loads of 30 bushels per acre, fresh from the river, and ploughs in directly. Are as good on sand and mixed loam as the best dung, but not equally on stiff soils.

---

### TIMBER IN BOGS.

**I**N every part of Europe, where marshy fens and bogs are found, if the soil be peat, trees are commonly discovered at various depths. It is the same in the lordship of Thorney; in the upland parts all sorts of trees, and in the lower fenlands they are all firs: and it is a fact that Mr. Wing has often ascertained, that many have been met with sawn off, and lying as they fell by the stump. The only rational conjecture is, that the forests were destroyed, as fastnesses where the natives took shelter from their conquerors, perhaps the Romans; who, to dis-

lodge them, thus demolished the forests. But how forests could arise, is another question; that would be impossible in the undrained state of the country, which would be all a lake. Some great convulsion of the country probably preceded the waters. The horns of red deer have been dug up, and are preserved at the abbey.

---

### NEW LAY.

IN Thorney, Cambridgeshire, where they lay down an arable course for six or seven years, they make it a rule to feed hard with sheep the first year, and mow the next. They sow hay seeds, rib grass, red and white clover, and ray grass.

---

### ROWEN.

WILLIAM MASON, Esq. of Necton, near Swaffham, keeps grass from the end of July, and does not turn into it at all till early in the spring the following year, when he puts in his fatting bullocks and sheep which have had hay in the winter. The old grass nurses up a great bite of young growth, and both together carry on the bullocks

well ; and it is excellent for sheep, nothing at that season equals it.

Mr. Overman, of Burnham, in 1799, kept thirteen acres of grass from Midsummer, an exposed piece, open to the sea and the north-east wind. Turned into it ten score and sixteen ewes, and their lambs, the 27th of March, and it kept them well a month. They would have been half starved without it ; but were well supported, to the surprise of many who saw them feeding. The piece was equally *tatted* in every part.

I was much pleased at Dogmersfield, in Hants, to view large reserves of aftergrass, for feeding sheep and cattle in the winter and spring, on dry hills in the park. Sir H. Mildmay is, on experience, a great friend to this husbandry, which he finds very profitable.

---

#### COCKSFOOT GRASS. (*Dactylis.*)

MR. OVERMAN, of Burnham, in Norfolk, observing the eagerness with which sheep, when let into a field at Burnham Market that had some cocksfoot grass in it, ran over ray-grass and every thing else, to get a bite of this plant, thought it worth cultivating, and sowed about an

acre on the dry, gravelly part just above his marshes. This spot was the only one in a large field that did not burn in the late severe drought (1800). He is convinced of the excellence of the plant.

Sir Mordaunt Martin, in 1788, observing, by an experiment, that this grass grew four inches in less than three days, determined to attend more particularly to it; he remarked, that when sheep were let out of a fold, they ran over every thing to get at a balk that was full of it, and there ate with preference to other grasses. In some parts of Norfolk it is called cows' grass, from their being very fond of it. He has cultivated it six years. The great perfection of the plant is, it's growing at Midsummer in a drought when every thing else is burnt up, as he found particularly this year (1800). He sows it, by way of ray-grass, with nonsuch, and finds it much more profitable.

---

### LAYING DOWN.

**L**ORP ROMNEY has laid down, and with great success, near eighty acres; he sows much white clover, and a little ray with the seeds of his best meadows; mows for hay the first year, and feeds with sheep the second. These new lays have

this year produced two tons, and a quarter per acre.

### PARE AND BURN.

**MR. POOL**, of Moulton Hall, near Newmarket, pares and burns sandy heath-land with very great success; he pares one inch by the breast plough at one guinea an acre, 10s. 6d. for burning, and 2s. 6d. spreading the ashes; is very careful to spread evenly, except the spots where the fires were made, from which he clears all the ashes. In about three weeks or a month, ploughs for the crop, very shallow, except for wheat; but three and a half or four inches for that crop. Prefers sowing corn first, rather than turnips, as it is found by experience that stock do not thrive well on turnips, if sown immediately on the burning; he therefore takes them for the second crop, then barley, then seeds, and, lastly, wheat; never two crops of white corn successively, by which means the land is sure not to be exhausted; and no rational objection can thus be made, he asserts, to the practice of burning, as the improvement, with this precaution, lasts twenty years. August 10th he talked of sowing wheat in a fortnight or three weeks, such early sowing being preventive of the mildew, to which these light lands are very subject. His neighbour, Mr. Frost, of Newmar-

ket, pared and burned this year (1801) sixty acres ; twenty were sown directly with barley, on one ploughing, and is a very great crop ; twenty under fine turnips, and the twenty remaining left for wheat. Much of the heath is not yet cultivated, by reason of the ill-founded prejudices against burning ; the result of permitting tenants to take three or four crops of corn in succession, after which ill management nothing recover the land but an ample manuring of clay and yard dung.

In ploughing in the ashes, Mr. Pool finds it essentially necessary to fix a small wheel, from nine to twelve inches diameter, about five inches before the coulter of his swing ploughs, which regulates the depth, whatever may be the inequalities of the land ; without it, the best ploughman cannot avoid turning in the ashes too deeply in many spots.

---

### REMARKS ON THE DISPOSITION OF SHEEP TO FATTEN, ON HORSE-TY- ING, AND VALE OF EVESHAM COURSE OF CROPS,

BY MR. T. DAVIS, OF LONGLEAT.

SIR,

*Longleat, Nov. 27.*

I sit down with pleasure to give you the best answers in my power to the questions proposed



by Lord Egremont. If I should not give such as are perfectly satisfactory, it is not from a want of inclination, nor, perhaps, from a want of proofs, but because I have applied my time more to the study of the powers of nature than of the powers of words.

In fact I have, by long experience and repeated experiments, convinced *myself* of the truth of the maxims I have laid down with respect to sheep, and particularly of that which you doubt, viz. that “there is a material difference in the quantity of food consumed by the same number of the same kind of sheep in a folding state and in a fatting state;” and I prove it, or at least attempt to prove it, in this way :

*Inactivity and rest produce fat, and all fat is disease.*

*Exercise is nature's antidote.*

Sheep kept in a *folding* state, are kept in a state of *exercise*.

Sheep kept in a *fatting* state, are kept in a state of *inactivity*.

Those kept in the former state, having only a *given* and *barely-sufficient* time to eat in, are *obliged* to be on their legs the whole time.

Those kept in the latter state have an *option* of time to eat and to take rest.

Different kinds of sheep have different propensities.

Those of a docile, quiet disposition, as the South-Downs are by *nature*, and the Leicesters are *made to be by art*, are prone to rest. As soon as they have eaten as much as suffices them, they lie down to rest ; and rest produces fat.

On the contrary, sheep of a rambling, restless disposition (as the horned sheep are in general), are on foot 12 or 14 hours out of the 24, even when in a fatting state ; and as they must of course *run off* much fat, they require more food and more time to reproduce it.

In a *folding state* those propensities are *counteracted*.

All sorts of sheep, whether naturally prone to take exercise or not, are *obliged* to take it in that state. *Exercise* produces *appetite* ; and the time and food allotted to them being barely sufficient, those that can eat *fastest* eat *most*. *Large sheep* (*ceteris paribus*) *eat more at a mouthful than small ones*, and, of course, eat *more food* in the same time, especially if they be of the *same breed*.

As to experiments to prove the truth of these axioms, I stated in my former letter, that I kept, and that others now keep, 400 (folding) South-Down sheep on the same land on which they kept 300 horned sheep ; and their comparative live weight proved that I ought to keep so many. I also stated, that the South-Down sheep produced as much or more mutton individually than the horned sheep. From the reasons I have above given (and the fact was really so), the cause is obvious, viz. because the South-Downs took *more rest*. When the horned sheep were put into a piece of grass, they ran round it two or three times before they tasted it ; the South-Downs began at the end where they were first put, and ate regularly through it, *as a maggot through a nut kernel*.

I hope I have explained myself intelligibly and satisfactorily ; if I have not, I shall think it no trouble to answer any other queries that may lead to a fuller elucidation of the subject.

As to the "*horse folding*," (or, as it is there called, "horse tying") in the Vale of Evesham, it is the common husbandry in all that part of the vale about Evesham, Broadway, &c. and has been so from a remote period, probably as far back as the introduction of vetches, and long before the introduction of clover. Indeed, I do not see how they could have maintained their

working horses in a country which, before it was enclosed, had so little grass land, in any other way.

The land, which is a very deep and moderately strong loam, was ploughed up, *when in a common-field state* (and now not easily altered), *in half-acre lands*, from two to four feet perpendicular height in the middle. This land, from its natural depth, and from being ridged up so high, is subject to be too dry and friable in the middle ridges; and no manure is found to be so good a preparation for wheat as sowing the land with clover or vetches, to be eaten by horses on the spot. The horses are tied by a chain round the fore fetlock, fastened at the other end to an iron pin driven into the ground in the middle of the ridge, and long enough for the horse to reach the outsides. The clover or vetches are mown daily, and laid in small heaps, so that the horse must tread the whole land to get at them. Each horse has his station in a direct line across the ridges, and all are moved on regularly every night during the whole summer, until the end of wheat sowing; when they are all taken into the yards, and kept during the winter on bean or pease halm. Hay is too scarce there to give it to working horses.

Their course of husbandry is as follows, and it certainly is not a bad one.

1. Wheat, manured by horse tying.
2. An outright year's fallow, which they think (and, perhaps, rightly) is on such land a necessary preparation for barley.
3. Barley ; one half with seeds, and one half without.
4. The seeded part fed off with horses (very little made into hay).

Another part sown with vetches, also fed off.

Residue, beans or pease, and frequently both together, for the purpose of making better fodder of the halm.

As their land (like most other) is tired of a constant repetition of clover, they change the clover part every fourth year, so that each piece is only seeded once in eight years.

Those who have sheep, frequently fold them on the pease and bean brush ; but they allow horse tying to be much preferable, and say that the land does not forget it in the eight years.

I am, Sir,

Your most obedient servant,

THOMAS DAVIS.

*The Reverend A. Young.*

SIR,

*Longleat, Jan. 4.*

THE satisfaction I have in hearing that Lord Egremont thinks my letters of consequence enough to give them a second perusal, is an

ample compensation to me for the trouble of explaining them.

With respect to my assertion, that Leicestershire sheep are made docile by *art*, I explain it in this way :

The number of *real original* species of sheep in this island is much smaller than is generally imagined.

I have taken more pains than most men (perhaps more than any one who has been candid enough to *tell others* the result of his inquiries *gratis*) to ascertain what are original species and what are varieties. Of the latter we have, doubtless, many; some produced by care, others by neglect, and perhaps, in some degree, all influenced by soil and climate: and the same causes are producing new varieties daily. To say what are *really* species, would require too much room for a letter, because I should be called on for proofs too copious for a letter; but if ever I have the honour to see Lord Egremont, I have no doubt of convincing him that my ideas on the subject are at least plausible, and perhaps true.

Mr. Bakewell, although he told me more than he told most men, would never tell me what the Leicester sheep were produced from; but I have often *told him*, and he did not contradict me: in fact he *could not*, for the fact speaks for itself.

I say, all the *long-woolled* sheep in England

are originally *one* species. The Welsh are the original stock. The Cotswold are the Welsh enlarged, improved, and domesticated. The Leicester are the Cotswold reduced, refined, and still more domesticated. Bakewell's whole secret for producing this *refinement*, was first selecting the most delicate males and females, and then breeding *in and in* until he had attained his object of reducing the bone and spirit of the animal to a *mere machine for making fat*. He knew crossing would restore strength and spirit, but these were incompatible with his system; and he therefore studiously avoided it. I know this to be a fact, as he told me so himself; and assured me at the same time, that it would take *another age* of perseverance in the same system to bring the animal to *perfection*.

So far I have a right to say that Leicester sheep are made docile by art; for the original species are inhabitants of the mountains, and as wild as deer.

It is plain Mr. Bakewell could not have used any cross to produce this kind of sheep: if they had been a mixture of any two species, some of the progeny would have turned after the old sorts, as a cultivated carnation runs back to it's original clove ('*Naturam expellas furcâ, &c.*') But Leicestershire sheep *do not run back*, therefore they are *a species*; only a species that is im-

proved, refined, domesticated, and (like all other wild animals that are domesticated) deprived, in a great degree, of all it's natural habits and propensities.

I am, Sir,

Your very humble servant,

*The Reverend A. Young.*

THOMAS DAVIS.

You mistook my idea respecting 'all fat being disease.' I did not mean that fat animals were *unwholesome* food, but that the operation of fattening an animal was putting it into a state against nature, and, in fact, putting it into a state of disease. Chickens in a coop get fat; turn them out they will run it off again: let them stay three days too long, they will get fat livered, and be sick. Every *man* who gets fat fast can give a *practical* dissertation this head.

I beg my compliments to your father, when you see him. We had a sharp spar at Bath, but the account is now settled, and I shall be happy to be better acquainted with him. Our dispute was on the old subject, 'sheep folding;' we are possibly both right and both wrong, not making proper allowances for soils, situations, and circumstances. A man may as well think of adopting an universal language, as an universal agriculture.



OBSERVATIONS REGISTERED IN THE  
COURSE OF A VISIT TO THE RIGHT  
HON. THE EARL OF COVENTRY,  
AT CROOM, WORCESTERSHIRE.

BY THE REV. ARTHUR YOUNG.

**T**HOSE only who have visited Croom, are able to appreciate the beauties of this incomparable spot, for it is certainly the first in the number of those decorated seats of the nobility which have so justly contributed to render this country the garden of Europe; and that which serves to heighten our pleasure is, the circumstance that it is the creation of it's present owner. The exertions which have been made in the course of a long life, almost entirely dedicated to a favourite pursuit, are at this time such exhibitions of rural scenery, of ornamental gardening, and of botanical curiosity, as are not, I question, to be altogether equalled in any other part of this island. When his Lordship first inherited the estate, the mansion was of red brick; adjoining to it was the church; a variety of houses and other buildings, such as stables, barns, and offices of various descriptions, occupied a considerable portion of ground in the neighbourhood; the lands about the house were laid into small en-

VOL. XXXVII. No. 213. H h

closures, encumbered with pollards and fences\*, and much in tillage; and the pasture, as well as the arable, were each thrown up into that preposterously-high and broad-arched ridge and furrow, the present abomination of the country. After this manner the deer park was laid down; but his Lordship, at a considerable expence, pared off the turf, ploughed the land level, and replaced the turf, having laid together round the house† a park of 1200 acres,

\* Brown used to say, Every fence was an offence.

† The mansion is 150 feet by 70, and, under Brown's management (who was upon this, as on all other occasions, very much assisted by his Lordship), has been rendered an excellent stone edifice, without being a magnificent one, for the house is not the great object at Croom: however, there are some things in it worthy attention—a room 65 feet in length, and high in proportion, which occupies one end of the house; the cieling, by Adams, from the ruins of Palmyra, and is universally allowed to be a very fine specimen; the cornice and architrave are very neat; the chimney piece is supported by two female figures in marble, by Wilton; the drapery of excellent workmanship, than which nothing can possibly be finer; the paintings are by Cipriani, and are extremely valuable. This room is fitted up in the chastest style, except, perhaps, the casts of Apollo, Mercury, &c. which occupy the niches. In the center a very large bow is thrown out, which commands some of the most delightful views of the park, and receives no inconsiderable addition from the magnificent boundary of the Malvern range of hills, which seem to be placed on the spot which they occupy for the design of con-

interspersed with clumps, plantations, and single trees, everywhere so judiciously arranged as to command from every point of view some of the mildest and most pleasing views that can be seen. A sheet of water nearly two miles in length, the labour of ten years, has been made, which winds through the park in a serpentine direction, and gives to the neighbouring scenery it's richest and most enchanting beauty. The noble church\* which has been erected, when seen from the house, and the surrounding ob-

tributing by their effect to the completion of the prospect; nor will the fastidious traveller, let him turn which way he please, have any occasion to find fault with the arrangement and disposition of the several parts. Another room is fitted with the tapestry of the Gobelins manufacture, representing the four seasons, suspended from the cieling in the form of pictures; and those who have a taste for this celebrated manufacture will do well to examine the specimen at Croom, for, in truth, it is a splendid sight. In the saloon is the Lord Keeper, a fine painting by Vandyke, and his son, Sir Thomas Coventry, by the same hand; as also his present Lordship's first wife, perhaps the most exquisitely-beautiful lady of the age which she so contributed to adorn.

\* In this church are the monuments of some of the family, removed from the old one, particularly the Lord Keeper, whose admirable character Lord Clarendon has drawn in the beginning of his history in a very masterly manner. It is well worth reading, since it is confessedly the best and most finished portrait in the whole work.

H h 2

jects, adds a singular elegance to this lovely spot. Brown placed it in the best point of view it could possibly occupy, at the distance of half a mile from the house, flanked with plantations, and presenting only it's western side to view; the interior is the work of Adams, and chaste and elegant it is in the highest degree, and remains no inconsiderable specimen of his architectural talent. A whole village has been built, with suitable gardens to each of the cottages. But surpassing every other object, the pleasure grounds, the plantations, and the flower gardens, the hot and the green houses are embellished with such a profusion of the choicest productions from the East and West Indies, from the Cape, and from Botany Bay, as well as the pleasure grounds intermixed with such a variety of the forest and other kinds of trees from America and other parts of the world, as have long rendered Croom well known to the scientific inquirer after botanical knowledge, and inferior only to Kew in the number, variety, and magnitude of the productions which it affords; and that which cannot fail to be observed by every elegant observer of rural scenery, is the taste, judgment, and skill which perpetually appear in the disposition of the grounds.

In the first, or *Home Shrubbery*, almost upon entering, are some very fine specimens of the *lau-*

*rus sassafras*, *crataegus coccinea*, and the *celtis orientalis*, and two very fine specimens of holly, the silver and gold stripe, but particularly a remarkably-fine *gingba biloba*, 40 feet high, and certainly the largest in England. Here are also the yellow horse chesnut, the *nyssa integrifolia*, and the *magnolia glauca*, which is so singularly sweet as to scent the whole walk; a very large *quercus ilex*, *diospyros Virginica*, and *Canada Bonduc*; the cedars of Lebanon are all remarkably fine; the *liriodendron tulipifera*, one of the noblest in England, and every year covered with blossoms; the *magnolia tripetala*, *bignonia catalpa*, the *pinus resinosa*, and *fraxinus excelsa*; the deciduous cypress appears to every advantage with it's tender and delicate foliage; an *arbutus andracene* and *pinus cembra*, both the oldest and finest in the kingdom; the scarlet *arbutus* and a *hemlock spruce*, each very fine; here are likewise several very fine specimens of the upright cypress; as also some very fine and thriving trees of the *quercus ægylops*—the seed of this oak is very difficult to get, as the squirrels, jays, &c. are very fond of it; and women are constantly set very early and late about the tree to preserve it as it falls\*. Amongst the climbing

\* The American acorns are sent over in such wretched order, or are preserved on shipboard so badly, that hardly one in 50,000 turns out good for anything. Lord C. has had many

plants I noted the paper mulberry ; a fine *bigonia radicans* in full blossom, covering the wall with it's trumpet flowers ; the *climatis viticella* and *florida*, flowering all the summer ; *lycum barbarum*, *cercis siliquastrum*, *laurus benzoin*, *kel-neuteria paniculata*, and the magnificent *sophora tetraptera* ; *celastrus scandens* and *punica nana* ; but above every other plant of the kind, and far beyond all others anywhere to be seen, are three specimens of the *magnolia grandiflora*, trained against the dairy wall, the largest of which is at least 28 feet in height, and covers the whole wall, throwing out a profusion of blossoms ; they are confessedly the finest in the kingdom. The hothouse in this shrubbery contains, amongst a great variety of curious productions, a very fine pimento, which has born seeds\*, and a *laurus cassia* equally so ; and the cinnamon tree, *cocos nucifera*, *corypha umbraculifera*, *termi-*

boxes without finding that a single acorn succeeded, which makes the seed from these trees so much the more valuable.

\* Upon this Lord C remarked, that all the seeds which have been sent over to this country from America, have never as yet vegetated, the cause of which could never be discovered. It was the same with the *magnolia* ; but the late Lady Coventry having remarked this, had the seed gathered *rather* before it was ripe, and instantly sowed it : and if it be planted the hour, or rather the minute, it *fall*, it will in that case fructify.

*nalía angustifolia*, *mimosa copallina*, *jaquiniá armillaris*, *allamanda cathartica*, *spondias luteus*, *chrysophyllum canito*, *elæodendron orientale*, *omphalæa triandria*, *coccoloba pubescens*, *eugenia jambos*, the superb *Strelitzia reginæ*, and above a dozen varieties of the passion flower. Here were also the *monsonia spinosa*, the *clerodendron infortunatum*, with it's fragrant flower and stinking leaf, and the *magnolia Cbinensis*; besides a great variety of Cape plants, of the *amaryllis*, *pancratium*, *bæmantbus*, &c. &c. At the upper end of this *Home Sbrubbery* is a circular stone summer house, which affords some very pleasing views of the park and Bredon Hill, terminated at a distance by the Cotswold Hills. Passing this, and through another called the *Church Sbrubbery*, we enter the *Greenhouse Sbrubbery*, where is a noble *male spreading cypress*, a very fine *sophora Japonica*, and *flowering ash*; several very large *stone pines*, and other productions, the bare names of which can hardly be enumerated. Advancing further, the gravel walk leads under a bridge, to a lake which bursts all at once to view. Here it was that Brown displayed the extent of his genius. This spot was nothing else than a boggy morass; it is now, perhaps, one of the most perfect pieces of garden scenery anywhere to be met with. A piece of water of several acres has been formed

out of it, with two islands ; and the walk which leads around it, and over a large iron bridge, shews it to such advantage, that it is impossible not to be pleased with this enchanting spot, and equally so not to have bestowed our admiration upon him who created it. Indeed, his Lordship has perpetuated this circumstance on the spot, nearly in the following words :

Sacred to the memory of Launcelot Brown,  
Who, by the powers of his inimitable and creative genius,  
Out of a morass formed this garden scene.

In the borders of this lake, among many other fine trees, is a very fine *betula laciniata*, the leaves and the manner of growing so nearly resemble the *ægylops* as hardly to be distinguished at first view ; but a noble spruce, perfectly unrivalled for beauty and feathering, with it's broad branches bending to the water, immediately struck my attention—for it is so fine a specimen, that I question if such another be to be seen ; a cedar 80 feet high and perfectly straight, which is the more remarkable, as they usually lose their leading shoots long before. A little further are some very fine young oaks, particularly a *Turkey oak*, remarkable for it's broad leaf ; the *willow-leaved* and the *variegated oak*, a *triple-thorned acacia*, and some noble *occidental planes*, especially one on the south side of



the water, near to a very fine deciduous cypress, and adjoining to some fine cluster pines: there are also some other fine planes near to the passage boat.

Before we proceed any further, it may be observed, that in these pleasure grounds, which were laid out by Brown, new views of different and of the same objects are scattered with so much taste as everywhere to present the chastest and most pleasing scenes: the house, the church, the water, a noble greenhouse in the form of a temple, the Cotswold and Malvern hills, are seen to every advantage, yet nothing too crowded, nothing is jumbled; all is nature.

In a hothouse in the flower garden I observed a *Carolinea*, *pandanus odoratissimus*, *ixora pavetta*, *coccoloba longifolia*, *chrysobalanus*, several varieties of the *gardenia*, and *epidendron*; a fine *acbras* (*sapota*), *melicocca*, *melastoma*, *Geoffroya*, *capparis*, *canella alba*, *tabernæmontana laurifolia* and *citrifolia*, *bippomane*, *mancinella* (the manchineel), the most poisonous tree that grows, every part of which is noxious—it is well known that it is the juice of this tree with which the Indians poison their arrows—and a great multitude of other curious productions, in this roasting house.

In the *Heathhouse* there is very fine collection of Cape plants, among which are nearly 30 different *proteas*, above 100 varieties of *beats*—

amongst the rarer sort I noted the *retorta*, a fine *massoni* of very considerable height, *ampullacea*, *Aitonia*, and *vestita*; of the *Banksia*, nine or ten genera; as many of the *diosma*; of the *geranium*, above 100 varieties, including seedlings, and more and new varieties are produced every year; indeed, of the genus *pelargonium* and the *erica* there seem to be no end. This collection is well stored likewise with the genus *diosma*, *Struthiola*, and *Mimosa*, from Botany Bay and the Cape; the *melaleuca superba*, from New Zealand; Botany Bay fig. and several of the *Gnidia*, from the same country; *Gnephbalium*, *Xeranthemum*, &c. &c.

A part of the flower garden is, though not exclusively, dedicated to the growth of American shrubs and plants, hence called the *American Border*: it contains every variety of the *azalea*, *Kalmia*, and *rhododendron*, *ledum* and *vaccinium* genus; 15 varieties of *Andromeda*, the *Daphne Pontica*, a fine *andracne*, and all the hardier heaths. The soil for this border (a black sand) was brought, at a considerable expence, by the Severn, from Bewdley Forest.

From fifty to sixty varieties of the rose occupy a border of this garden, nor can anything be equal to the beauty of this collection when they are in blossom. Here is also a most noble collection of the *Dianthus*.

In the herbaceous part are alphabetically arranged all the hardier plants, indigénous as well as exotic; and round the fish pond are borders for rock plants; amongst which I counted 15 of the *Sedum*, six of the *sempervivum*, and 20 of the *saxifrage*.

In the conservatory is a noble *laurus camphora*, which has been in it 40 years, and would have been 60 feet high, had there been room for it—it is this tree which produces the drug camphor; a very fine *diosma odorata*; a prodigious fine *olea odoratissima*; a very large *schinus molle*, the foliage most beautiful, cut down, like every other tree in this conservatory; an *érica arborea*, 20 feet in height; an *oak-leaved myrtle*, as high; and the *Calycantbus precox*—this and the olive, as well as many others, are the first plants of the kind in England, and have flourished here above 30 years, and flowered above 22; though Lord Macartney brought them from China, and introduced them as unknown before, when Lord C. had possessed them 25 years. The *Calycantbus* is figured in the Botanical Magazine from a plant which came from Croom; and it is so fragrant when in blossom as to scent the whole garden, as his Lordship has stated in that work to Mr. Curtis.

In the *orangerie* is the *mimosa suaveolens*, the seeds of which were among the first of those

sent to this country from Botany Bay ; and this plant, which is trained against the back of the wall, is 20 feet high, and spreads almost the whole length of the house: the *discolor* is another of the same tribe, and nearly as large as the other.

Not less curious than any other part of this singular collection is the *arboretum*, which contains the following trees and their varieties (without including any of the common forest trees, &c.):

	Gen.		Gen.
<i>Acer</i>	- 15	<i>Juglans</i>	- 3
<i>Æsculus</i>	- 3	<i>Juniperus</i>	- 5
<i>Ailanthus</i>	- 2	<i>Kælruteria</i>	- 1
<i>Amorpha</i>	- 1	<i>Laurus</i>	- 1
<i>Amygdalus</i>	- 2	<i>Liquidamber</i>	- 1
<i>Arbutus</i>	- 2	<i>Liriodendron</i>	- 1
<i>Betula</i>	- 11	<i>Magnolia</i>	- 4
<i>Bignonia</i>	- 1	<i>Mespilus</i>	- 3
<i>Carpinus</i>	- 3	<i>Morus</i>	- 3
<i>Celtis</i>	- 3	<i>Oleagnus</i>	- 1
<i>Corylus</i>	- 1	<i>Pinus</i>	- 25
<i>Cratægus</i>	- 18	<i>Platanus</i>	- 3
<i>Cupressus</i>	- 5	<i>Populus</i>	- 10
<i>Diospyros</i>	- 1	<i>Prunus</i>	- 5
<i>Fagus</i>	- 2	<i>Ptelea</i>	- 1
<i>Fraxinus</i>	- 5	<i>Pyrus</i>	- 5
<i>Gingba Biloba</i>	- 1	<i>Quercus</i>	- 15
<i>Gleditsia</i>	- 2	<i>Rhamnus</i>	- 1
<i>Guilandina</i>	- 1	<i>Rhus</i>	- 3

	Gen.		Gen.
<i>Robinia</i>	- 1	<i>Tilia</i>	- 3
<i>Salix</i>	- 1	<i>Ulmus</i>	- 3
<i>Sorbus</i>	- 3	<i>Xanthoxylum</i>	- 1
<i>Thuja</i>	- 2		

In so great and so varied a collection it must naturally happen that many of these trees will outstrip the others, as soil, climate, situation, or other circumstances, should be favourable or otherwise; but in general they thrive remarkably well. But to this magnificent repast there is no end.

Besides all this, there is a very capital *menagerie* (the late Lady Coventry's), walled round and subdivided into separate closes, standing upon upwards of six acres of ground. Partridges and pheasants, both gold and silver, as well as the common sort, are here reared in the greatest abundance; it affords also a protection to other curious birds. The total quantity of land occupied by the pleasure grounds and gardens, including the *menagerie*, is about 50 acres.

It would take up too much time to particularize the different botanical productions of Croom; suffice it to say, that no expence has been spared to render the collection complete: and it cannot fail to be a most capital object with every person who passes through the center of England, whether to admire the rural scenery which

Brown has created, and which he styled his first, as well as his favourite child\*, or to feast the eye with a profusion of plants culled from every quarter of the vegetable world.

Having dwelt so long upon the botanical productions of this delightful spot, the less will be said now we come to consider his Lordship in the character of a grazier, for not an acre of arable land is in hand ; all is meadow and pasture, the latter of which is alternately mowed every other year. This present year the following was the quantity cut :

			Acr.	Roods.
North Lawn	-	-	10	2
Church Hill	-	-	35	0
North Field	-	-	74	1
New Field	-	-	62	1
West Field	-	-	88	2
Severn Meadows	-	-	43	0
				<hr/>
				313 2
				<hr/>

\* Brown spent much of his time at Croom ; it was his favourite residence ; he never found himself so much at home as when there, nor at any time so happy. As he began, so he was desirous of ending his career there, as he frequently, in conversation with Lord Coventry, expressed a wish to be buried there : but some time after this, having purchased an estate in Somersetshire, and his family having thought that he had intimated a desire to be interred upon it, was considered by Lord C. as having revoked his original intentions ; though his Lordship informed the family that he could not possibly have any objection to complying with his request.

Next year (1802),

	Acres.
Cow Pasture - - -	69
Ox Leasow - - -	65
Town Field - - -	34
Horse Close - - -	17
Cub's Moor - - -	114
Sandy Orchard - - -	14
Slaughter House - - -	4
Severn Meadows - - -	43
	<hr/>
	360
	<hr/>

Upon an average these pastures produce a ton to an acre, but in favourable years much more. Eight or nine waggon loads per acre of Worcester, Upton, or Pershore muck are annually spread every third year, which brings up a profusion of white clover: including the carriage of six or seven miles, it stands in his Lordship 30s. per load. The soil a rich and deep loam, upon a cold and retentive subsoil; but so well drained that, though it was a morass not many years back, it is now perfectly dry and sound. Many of his drains are open, and turfed to the bottom, and thus no water ever stands; and Croom is now noted for it's dryness, as well as being well kept: and although the house be surrounded with 1400 acres, under the immediate inspec-

tion of his Lordship, not a thistle or a weed can be seen, not a single tree or shrub is out of its proper place. Mowers earn 1s. 10d. per day, and seven quarts of small beer, valued at  $1\frac{1}{2}$ d. or 2d. per quart. Women earn 9d. At this time 28 men and 40 women find constant employment; though little attention be paid in making their hay, it is almost inconceivable what a quantity of guzzle they drink.

The stock upon this land is as follows:

#### Holderness.

Cows in milk	-	-	-	-	39
Two and three-year-old heifers	-	-	-	-	11
Yearlings	-	-	-	-	10
Rearing cow calves	-	-	-	-	13
Five and six-year-old oxen	-	-	-	-	6
Three-year-old oxen	-	-	-	-	11
Two-year-old steers	-	-	-	-	8
Yearlings	-	-	-	-	6
Bull and bull calves	-	-	-	-	5
Suckling calves	-	-	-	-	6

#### Alderney.

Cows in milk	-	-	-	-	12
Two and three-year-old heifers	-	-	-	-	3
Yearlings	-	-	-	-	4
Ditto steers	-	-	-	-	4
Bull and bull calves	-	-	-	-	3
Rearing cow calves	-	-	-	-	5
Buffalo (ox)	-	-	-	-	1



Nothing can well be imagined to exceed the beauty of these Holderness cows: selected with a view to colour as well as produce, they add, in no inconsiderable degree, to the beauty of the park. No two are alike; for they are principally remarkable for the variety and richness of their colours, in which they exceed, I think, every other breed. They are great milkers, though his Lordship's Alderneys produce a greater proportion of butter. About one hundred weight of butter per week is usually made in the summer, and three ton of cheese per annum. Every second or third year his Lordship has a sale at Croom, for his refuse cattle and sheep, which collect great numbers of people, who buy up these cattle very readily; and thus they have been distributed over this and the adjoining counties.

His Lordship's sheep stock consists of about 620, various, but chiefly Leicester and African; which last were never known to rot, although they have been upon the spot for several years; to which may be added 33 horses: and let me here mention, that the deer park (400 acres) is renowned for it's venison, which for flavour and fat stands without a rival.

Having heard that John Darke, Esq. of Bre-  
VOL. XXXVII. No. 214. I i

don, went largely into the feeding of Hereford oxen for Smithfield. I took the opportunity of being at Croom to ride over, and examine his breed. The parish consists of the townships of Bredon, Mitton, Hardwicke, Kinsham, Norton, Westmancote, and Cutsdean ; but a great part of it still remains in it's uninclosed state. The situation is exposed to south-west winds, which drive up the Bristol Channel ; but the Avon and the Carran bound it on the east and on the west for eight miles. The best grazing grounds are employed in feeding Hereford and some Devonshire oxen for Smithfield ; the remainder is converted into dairy ground, where both butter and cheese are raised in large quantities : but Mr. Darke observes, that the dairies which manufacture the best cheese make no butter, but depend entirely on the cheese ; and where skim cheese is made, the land is considered to be too rich for one-meal, since it causes it to heave, by which means a strong and rank flavour is produced. The soil is in so extensive a parish of course highly various ; that of the best pastures, at Mitton and Bredon, consists of a strong, deep, and mucilaginous, dark-coloured loam ; in other parts a clayey gravel ; but pebbles are intermixed with every soil. The meadows on the banks of the river derive their fertility, which is

exuberant, from the overflowing of the Avon, which runs for six miles through the parish, bringing down the washing of the manure from Warwickshire: but Mr. Darke makes this remark, that they are at the same time too frequently damaged, as they are the first flooded, and perhaps lie the longest under water of any in the kingdom.

Mr. Darke's oxen, which are large and very fine, being selected with much attention, are bought in, at the age of six years, in spring and autumn, and lately, in consequence of the high price, at five. He turns into his pastures till the lattermath fail; but during the summer, all those which go to market in the following winter are taken into the stalls, and have at first a small quantity of oilcake given to them: the others he feeds the first winter upon coarse or flooded hay, and some straw, and the second they are regularly caked till they are driven to town. His cattle for next winter's sale are at this time (July) feeding in those rich pastures just described. Amongst these very noble cattle, a heifer caught my attention, which for size, beauty, and fat is hardly to be paralleled; 100*l.* is her price, and which he feels confident he shall have. His sheep are of the Coteswold breed, or, as they are for the most part, crossed with

the Leicester: but Mr. D. considers them too small for his productive ground, which is a carpet of white clover, crested dogtail, and perennial rye grass.

*Vale of Evesham Husbandry.*

In respect to the tillage of this district, it may be said that their soil is better than their management. In a ride with Mr. Darke through this and several of the adjoining parishes, we made our remarks, as we passed, upon the husbandry of this very fertile district; and found that the farms were chiefly in the common-field system, and, consequently, property much intermixed. The system of cropping has been, time out of mind, three crops and a fallow: in the fallow year the lands are a common for sheep.

1. Fallow.
2. Barley.
3. Beans, clover, or tares.
4. Wheat.

The fallows in general remain the whole winter in wheat stubble, and are ploughed down in March, April, or May. Mr. D. esteems the

earlier ploughing the better mode, yet it is not uncommon to leave them unploughed till May. The reason they use is, that it produces keep for their sheep; which in general are folded on the fallow till after harvest, when it is shifted to the bean stubble, to assist the ensuing wheat crop. The muck is invariably carted on the land in the burning heat of July, where it lies scattered on the surface till the sun has evaporated every fertilizing particle. Mr. Darke attributes this custom to have arisen and to have continued from the heaviness of the soil, which does not admit that carriages or horses be driven upon it but at midsummer or during very hard frosts. The prevailing mode of working their fallows, after having been ploughed down, is to ridge them up with a plough for that purpose, the aukwardest that ever was made, on or about midsummer; after this to put on the manure, and to ridge-plough the land again in September or October, in which state it remains till the barley is sown in the spring: but Mr. Darke prefers to sow the fallows in January or February, with three or four ploughings in the summer, in the driest seasons; and to place the dung in mixens, ready to be carted in the frost, or, in a dry season, in the ensuing spring. The muck is frequently laid on the land immediately from

the fold yard ; if for pastures, it is made into a dunghill, and turned : this is Mr. Darke's practice. For mixens they are not famous ; nor is lime much used, which in many parts of Worcestershire is the first and best of manures. The barley crop succeeds the fallow ; and should be sown, if the land get dry, in March, or in any dry season from March till the 20th May. The present custom is to sow clover on the lands when they sow the barley ; this often overcomes the barley, and injures the crop : but the mode now used in general is to sow the clover six weeks after the barley, which method seldom fails. It is striking, that barley should be the prevailing spring crop on these strong, heavy lands. After all this fallowing, ploughing, and mucking, their crops are miserably contemptible ; yet they prefer it before oats, alleging that their lands are in general so pestered with the wild oat ; and it is a conceived opinion that even the best-cultivated oats foul their land. Seed, from four to five bushels ; crop, twenty to thirty.

The bean crop succeeds the barley ; and about sixty years ago they were all sown broadcast, at the rate of from seven to eight bushels to the acre. This mode is now universally laid aside ; and they are now set in lines by women, four

bushels (nine gallons) per acre, at 2s. per bushel: a good hand will set from four to five pecks. Each woman is allowed a quart of cyder or beer with her dinner (no victuals allowed). The general time for setting is from the middle of February to March 20th. The better way is to set them north and south, that the sun may have the more force between the rows; and it matters not whether they cross the lands or reach lengthways. The crop must be twice hoed, besides giving a hand weeding, or thrice hoed. The large bean is universally planted; the Berkshire has been tried, but not with such general success. When crops are attentively managed and well cleaned, from thirty to forty bushels are gained (eight gallons). The best time for planting is a wet season; according to an old adage in the vale, *Plant your beans in the flood, and they come like a wood.*

Clover and vetches are here and there, in two or three lands in a place, planted in the bean quarter; to which, in the months of May, June, July, and August, they tether their cart horses, in a way peculiar to this vale and it's vicinity: ropes are made, an inch in diameter, with the rind of wych hazel twisted, at one end of which is left an eye, through which they drive a stake into the ground 14 or 16 inches; the twisted

rope is from 10 to 12 feet in length, and at the end next the horse's foot it goes into an elm stick 30 inches in length, on which it turns round, acting as a swivel, and preventing it's being twisted into knots; a strong piece of whit leather goes round the fetlock of the horse, which communicates with an iron swivel fixed in the elm stick, the diameter of which stick is two inches and a half; and by this means the horse is confined to his own land; for, most probably, the next ridge has another owner. On lands which have been thus *horse-tied*, which is the term applied, they never fail from reaping abundant crops of wheat; insomuch, that on seeing heavy wheat crops, it is a common exclamation, 'This was horse-tied.'

Wheat after beans, from October till the end of November is the season most desirable for planting; yet it never does well, if the seed do not stick to the clod, yet too much wet is very hurtful. As soon as the beans are removed, harrow the stubs; then plough them as lightly and truly as possible; then the sheepfold should go on, and as far as that goes the crop is considered as ensured. Two bushels of seed on the lightest land to three bushels on the heaviest, are a proper quantum for broadcast: here two men are employed, and often three, to mend the land,



and head the wheat in after the plough. Of late years much wheat is drilled, and more set; usually planting on an acre from one to two bushels. Mr. Darke states that his wheat is usually set without a line; having ploughed a strong furrow nine inches, the women with a pin set the wheat. Two Winchester bushels per acre are thus planted at the expence of 7s. If a small portion of seed be left uncovered, when the harrow comes over, it is generally hid. This mode of setting is peculiar to Mr. Darke, who was forced upon it by necessity, the land being too wet to admit either horses or harrows; and that year he had in an open common field 40 bushels and a peck for seven acres together (nine gallons and a quart to the bushel); this year the seed was hid with rakes. Of late years it has been a constant practice to hoe the wheat twice in the spring.

The clover sward sown with wheat is ploughed up with a square ten-inch furrow; it should then lie four weeks: and this general mode produces certain crops, and prodigious after horse-tying; even from 40 to 50 bushels per acre.

Repeated trials have been made to plant wheat on the fallow; but Mr. Darke observes that it has never yet succeeded; it gets lodged, weak in the straw, unproductive, and destroyed by weeds;

and yet in the district on the other side the Severn, a farmer who did not sow wheat upon a fallow must be ruined.

Whenever wheat is sown after barley, it is not worth owning.

Upon the husbandry of this vale thus detailed, there are some circumstances which demand attention. Fallows are in this district a bed of weeds, and are most shamefully managed; more so perhaps than in almost any other. Muck is scattered over the land in July, for the sun to exhale all it's richness; surface, or hollow draining is an operation scarcely known; and from the mixture of property in the open fields, they are absolutely prevented from enjoying the benefit of it; and one negligent farmer, from not opening his surface drains, will frequently flood the grounds which lie above, to the great loss of his neighbours and the community. And although their lands be well adapted to sheep, yet draining is so little attended to, that out of at least 1000 sheep annually pastured in the open fields of Bredon, as Mr. Darke states, not more than 40 are drawn out for slaughter, or for other uses: the rot, scab, and other infectious distempers sweep them off. The subsoil of this vale is very cold and retentive; and from the high and broad ridges, every furrow is either a

pool of stagnant water, many feet wide, or, when it is dry, so saturated with it as to be a poison to vegetation. This arises from the depth of these furrows, which are usually four feet, and often deeper, and upwards of 40 broad; and sometimes the ridges are so high in the centre as to intercept the view which two men of ordinary size have of each other, when each is standing in an opposite furrow. What adds to the misfortune is, that where the headlands set in, the water is perfectly dammed up, and forms so many pools, which no present invention of drains, manifold as they are, can possibly prevent; and what is still worse, the lands seldom run more than two or three together in any one farm; so that if an intelligent farmer should at any time be inclined to drain or to improve, his next neighbour may be of a perverse disposition, and totally frustrate all his intentions. After this, the beggarly crops which are usually gathered upon these strong but highly-fertile lands are no longer to be wondered at. Of wheat, from 8 to 18 or 20 bushels; and of barley, from 20 to 28 bushels per acre, on a soil less adapted to that crop than to oats. And yet turnips are sown, and either haled into the yard, or folded with sheep, to the detriment of the barley crop; yet they find that this treading, as it firms the soil, gives a check to

the poppy, and other light weeds of that species, which are thus prevented from getting to a powerful head in the following crops.

As an improvement in their present course of crops in the Vale of Evesham, I would wish to recommend to the notice of intelligent farmers, whether the following system, wherever it be practicable, would not answer their purpose better; and which, whilst it abolish fallows, answers the three purposes of keeping the land clean; of affording straw and supporting cattle, for yielding dung to keep the land in heart; and of dividing the work of sowing so as not to render too great a number of horses or oxen necessary:

1. Beans.
2. Wheat.
3. Clover, tares.

Or, in other cases,

1. Beans.
2. Wheat.
3. Clover, &c.
4. Oats.

Having said thus much on the open-field management of the Vale of Evesham, it clearly ap-

pears that no improvements can be worked till the open and commonable lands are inclosed, or, at least, till they are allotted. Mr. Darke observes that about 27 years ago he obtained an act to inclose a parish in Gloucestershire, of strong clay land; his allotment was 453 acres, which in it's uninclosed state averaged about 8s. per acre, and it now fetches from 30 to 40s. Some part of this increase he allows to the times, but he considers this improvement as greatly owing to it's having been converted from indifferent arable land to excellent pasture. Before the inclosure the cattle and sheep were infamous, they are now of the first quality. He lays down with ten pounds of honeysuckle and six or eight pounds of milled trefoil per acre. Very few inclosures have been made in his district of Worcestershire; but as he lies at the extreme southern part of it, he is on almost all sides intersected by Gloucestershire, where there have been various inclosures, some very near him; and, in general, where they have been completed 20 or 25 years, property has been trebled at least. The lands have been drained, and if not converted into pasture, the produce of grain very much increased; and where this has been the case, cattle and sheep have wonderfully increased. Where there have been large commons, innumerable

advantages have arisen as well to population as to cultivation; and, instead of a horde of pilferers, an industrious and skilful race of mechanics and labourers have been obtained.

Accompanied Mr. Darke through Aschurch, Oxendon, and Overbury, to Dixon, to see Mr. Peacey, late of Northleach, who has lately purchased some lands here, adjoining to a very eligible property of Mr. Hickford's, at Dixon, which has lately been sold to Mr. Guest, 510 acres for 14,500*l.* and 2,500*l.* for the tythe; who immediately let it at 800*l.* per annum. Viewed the celebrated grazing grounds of Dumbleton (Lord Somers's estate): the lay field and another piece in the bottom are so covered with Dutch clover as scarcely to distinguish any other grasses; so thick, matted, and luxuriantly high (the end of July) that we agreed that an acre would with ease fatten a large Hereford ox, besides at the same time yielding a considerable profit from sheep. The present rent not above 40*s.* per acre, though at least worth 3*l.* to 4*l.* Passed from Bredon, through the centre of the Vale of Evesham, to Snowhill, through Kemerton, Beckford (where we called upon Mr. Wakeman, to see his long-horned cattle), through Wormington, Somerville, Aston (Lord Somerville's), and Laverton, to Spring Hill, where

(at least for the present) I shall finish my remarks. Throughout this tract the crops do not equal in quantity what might be expected: for although the open-field system may account for a considerable deduction in the crops, still this circumstance has no reference in those lands which have been inclosed from time immemorial, and in which it is found that the acreable produce is by no means in proportion to the goodness of the soil.

Before I take leave of Worcestershire, the state of the parliamentary inclosures in the county demands some attention. This subject has of late undergone the fullest discussion: and since it is a topic of the last importance, to be well acquainted with those effects which have resulted from 2000 inclosures which have been sanctioned by the Legislature in the course of the present reign, I shall finish the register of these observations with an inquiry into the present state of 28 parishes which have been inclosed by act in the last 38 years, furnished from answers to a circular letter sent by the Committee on the High Price of Provisions to the ministers of each respective parish inclosed, and returned by them to the chairman of the committee, by whom the returns were transmitted to the Board of Agriculture.

## GENERAL STATE

OF THE

## PARLIAMENTARY INCLOSURES IN THE COUNTY OF WORCESTER.

Year.	Parish.	Cm Pas. or Mead.	Open-Field Arable.	Heath, Down, or Fen.	Waste Land.	Total.
		Acres.	Acres.	Acres.	Acres.	Acres.
1763	Pirton	—	—	—	—	808
1763	Stone	—	—	—	—	379
1763	Bretforton	—	1264	—	379	1264
1765	Ehload	—	1211	353 Heath	—	1564
1771	Broadway	—	1952	360	—	2312
1771	Naunton Beauchamp	—	—	—	—	662
1772	Blockley	—	—	—	—	2126



## AGRICULTURE.

497

1772	Stoke Prior	—	—	—	400
1773	Hadsor Common	—	—	—	129
1774	Severn Stoke	—	176	—	690
1774	Upton Snodsbury	—	—	—	804
1775	Bredon	—	—	—	770
1775	Cleve Prior	—	240	—	1000
1776	Charlton in Crophorne	—	—	700	1600
1778	Rouselench and Radford	—	—	1100	1300
1779	Crophorne	—	—	—	1500
1779	Grafton Flyford	—	—	676	776
1779	Himbleton	—	—	1218	1358
1781	Hanbury	—	346	190 (y)	536
1783	Church Lench	—	—	360	530
1784	Dudley	—	—	—	975
1786	Harvington	—	284	578	862
1788	Fladbury	—	700	800	1500
1790	Dornstone	—	13	787	800
1795	Hanley Castle	—	—	60	1460
1797	Chaddesley Corbett	—	—	—	368
1797	Lindridge	—	—	—	30
1799	Brooms Grove	—	—	—	1000 (kk)
		1759	10896	902	1860
					27503

**VOL. XXXVII. No. 214. K k**

*General State of the Parliamentary Inclosures in the County of Worcester, continued.*

Year	Parish.	Before inclosing.		Since inclosing.						
		Acres of Wheat.	Acres of closing.	Wheat.	Barley.	Oats.	Pulse.	Dairy.	Cattle.	Sheep.
1763	Pirton	100	-	145	as before	as before	as before	considerably increased	fat cattle incr. stores as before	fat sheep increased, stores as before (b)
1763	Stone	none	-	inc. 6 to 1 inc. 400 bags per ann.	inc. 2-3ds	decreased	lit. gr. (c)	—	fat cattle incr. much in numb.	(d)
1763	Bretlerton	250	-	—	inc. 1-7th	—	beans incr. a 7th	—	fat cattle incr. much in numb.	increased
1765	Emload	131	-	decr. 41 acres	dec. 50 a.	decr. 70 a.	decreased 20 ac. (e)	increased	increased 1-6th	decreased from 2000 to 1320, but wt. equal
1771	Broadway	330	-	decreased 60 acres (f)	dec. 1-3d	—	—	kine decr. fr. 180 to 110, but imp.	—	increased half
1771	Naunton	100	-	inc. 20 acres	Rath. dec.	Rath. dec.	Rath. dec.	increased	increased	increased
1772	Beauchamp	205	-	decr. 1-4th	—	—	—	increased half	increased half	increased half
1772	Stoke Prior	none	-	as before	—	—	—	increased greatly	incr. tenfold (g)	increased
1773	Hadnor Com.	none	-	increased	increased	increased	increased	increased	increased	increased
1774	Seyn Stoke	none	-	decreased (h)	decreased	decreased	decreased	increased	increased	increased
1774	Upton Snodbury	128	-	inc. 21 ac. & ac. prod. inc.	decreased 354 (k)	increased	beans inc.	—	increased	dec. in no, but equal to 3 before inclosing

	46 175	94 185	incr. 48 acres incr. 10 acres	incr. 1-3d —	incr. 1-3d —	incr. 1-3d —	increased 1-3d decreased half	increased 1-3d stores increased, fat beasts trebly	increased 1-3d (f) incr. greatly in stores and fat sheep, and wool doubled (m)
1775 Breton									
1775 Cleve Prior									
1776 Charlton in Crothorne	260	260	as before	increased	increased	increased	increased	fat stock incr.	fat stock increas. (n)
1778 Rouseleuch and Radford	uncer. (o) 350	uncer. (p) uncer. tain (s)	gruly dec. (q)	decr. half	decr. half	decr. half	decreased	—	decreased (r)
1779 Crothorne			decreased (t)	as before	as before	as before	as before	as before	less in number, but more productive
1779 Grafton Fly- ford	150	200	incr. 50 acr. & ac. pr. inc. (v)	—	—	—	increased, and in value doubled	—	increased, & doubled in value (u)
1779 Himbleton	300	400	inc. 100 ac. but pro. as bef. (w)	—	—	—	as before	as before	as before (x)
1781 Hanbury	none	122	acreable prod. incr. (z)	increased	increased	increased	decreased increased	greatly incr. (as)	increased decr. in number, but greatly improv. (bb)
1783 ChurchLench	90	140	incr. 1-3d	—	—	—	—	—	—
1784 Dudley	none	140	trebled	increased tenfold	doubled	Pease doubled	—	—	decreased half (cc)
1786 Harvington	130	150	acreable prod. increased	increased	as before	as before	—	—	increased and im- proved (dd)
1788 Fladbury	200	160	as before, from improv. cult.	—	—	—	rather decreased	stores decreased	stores decreased, fat stock greatly in- creased (ee)
Car. forward	2945	3183							

K k 2

*General State of the Parliamentary Inclosures in the County of Worcester, continued.*

Year	Parish.	Before in- closing.		Since inclosing.						
		Acres of Wheat.	Acres of Wheat.	Wheat.	Barley.	Oats.	Pulse.	Dairy.	Cattle.	Sheep.
	Br. forward	2045	3183							
1790	Dormstone	110	121	decr. 15 qrs.	dec. 1-6th	dec. a 6th	dec. a 6th	decr. 1-6th	decr. 1-6th	decr. 1-6th
1795	Hanley Castle	15	400	great inc. (H)	grtly. inc.	increased	grtly. inc.	increased	increased	increased tenfold (gg)
1797	Chaddesley									
	Corbett	none	30	increased (hh)						
1797	Lindridge	none	none							
			(ii)							
1799	Bloomsgrove	3070	3734							

By this statement it appears, that out of 27,503 acres which have been inclosed by 28 inclosures, the major part of which was open-field arable, upon the whole there has been an increase (instead of a diminution, so much talked of) of the quantity of land annually sown with wheat; and it further appears, that although in some instances the fallows have been robbed of the sheepfold, yet, nevertheless, from improvements in tillage, this circumstance has been most amply repaid in an increased acreable produce; and in 18 inclosures where barley has been minuted, no decrease hath taken place, and it is the same with oats and pulse. And if we turn our attention to the effect which it has had upon live stock (cattle and sheep) and the dairy, we there find a result which cannot fail to gratify every friend to improvement; as the stock of sheep and cattle, which were half-starved, ragged animals, swept off by disease, and never slaughtered for meat, are converted into fat beef and fat mutton for market; besides a produce by butter and cheese, which adds to the account. That inclosures have in many instances been detrimental, I have no doubt; I fear the poor have been too frequently robbed of their common rights, their cows sold, and great hardship the consequence: but in other respects this country has received its first and greatest improvement by the inclosure of wastes and commons; and that the present exertions may terminate in one general inclosure, is the fervent wish of every friend to his country.

(a) Though the acres have increased 45 since inclosing, the quantity grown has not, since the tillage was folded with the common sheep; and fallowing was then practised, which has been given up since. Farms are now thrown together. Six teams were kept in the parish before the inclosure more than since.

(b) Pigs greatly decreased. General produce increased. 200 acres of the inclosed common now in tillage balanced by 106 of the inclosed common fields and old arable inclosures permanently laid down.

(c) Rye decreased three fourths.

(d) Farms enlarged in this parish.

(e) The cause of this diminution owing to a great part being laid down since the inclosure.

(f) Annual quantity decreased in this parish one third at least since the inclosure, owing to the loss of the sheep-fold. Horses decreased from 250 to 163.

(g) Potatoes increased tenfold.

(h) Hadsor parish (being old inclosure), in a state of cultivation before the inclosure, was 610 acres. The increase of wheat and other grain in proportion to the old and new inclosures.

(i) The quantity of wheat grown has decreased in a very great proportion, much arable land having, since the inclosure, been converted into pasture: less wheat, consequently, has been sown; but the produce has been greater in *proportion*, from improved cultivation, since the inclosure. Hay has increased.

				Acres.	Acres.
				before inclosing	since
(k)	Barley	-	-	128	93
	Beans, oats, tares, and clover	-	-	128	221
	Cattle	-	-	40	62
	Sheep	-	-	420	315

In this parish they fallow for barley. Before the inclosure took place, one of the common fields (four in number) was annually a fallow for barley; but since, as it is in the option of every individual to sow what he please, more wheat and less barley is grown, as the former is more adapted to the soil, and pays better.

Before the inclosure the stock of sheep kept was much too large, and, in consequence, half starved; and though the number is now considerably reduced, the breed, or quality, is so much improved, that one at present is esteemed equal to three before the inclosure.

(l) The produce of every other article is increased one third.

(m) Seeds of all kinds above doubled.

(n) Cattle and sheep, though, perhaps, not more numerous, yet far more valuable and productive.

(o) There were four fields, pretty nearly equal in number of acres, of which one was yearly cropped with wheat.

(p) Uncertain, every farmer cropping his farm according to his own mode. (q) Both wheat and all other grain is wonderfully less than what it was before the inclosure, full half.

(r) Poor rates advanced from 6ol. to 3ool.

(s) To this query it is impossible to return a satisfactory answer, as the quantity varies according to the mode of husbandry adopted; but in general there is much less wheat sown now than there was previous to the inclosure, and of a much inferior quality. (t) All inclosures of common fields tend greatly to diminish the growth of wheat: nor can they be advantageous to the public at large only when they bring into cultivation waste and unproductive land, and when they are proportioned into moderate-sized

farms; for *large farms* are a growing and fatal evil to this country.

(v) For the first seven years there was no increase in the annual quantity of wheat grown, as the chief of the waste land was laid to the parsonage, and being at that time so exceedingly ill tenanted, that part of the land was uncultivated, the rest flax. In the next seven years the wheat crop doubled throughout the parish, and the last seven years it has increased one fourth, except the deficiency of the two last years.

(u) The sheep have increased, and, allowing quality against quantity, are doubled in value. The cows have increased in the proportion of one half, allowing the former observation. Horses, &c. remain nearly as before.

(w) In consequence of the land being situated out of the reach of manure, and deprived of the usual sheep stock, in respect to folding, there does not appear to be any increase.

(x) Stock in general does not appear to be increased in any proportion whatever.

(y) Under the powers of the act, the commissioners ratified the exchange of this common-field land; which was then inclosed.

(z) One farmer speaks of his common land to this effect: "My 30 acres of new tillage produce me 170 bushels of wheat annually, 150 bushels of barley, and 128 bushels of pease or oats; all which is clear produce, because my remaining 26 acres of seeds and fallow now support as much live stock as the whole 56 acres when it was uninclosed."

(aa) Principally effected by diminishing the number of dairy cows.

(bb) The flock used to be 4 or 500, but now reduced to less than 200; but are, in proportion, much more valuable.

Turnips, vetches, and clover are now sown in greater abundance; but sheep folding for wheat, &c. now lost.

(cc) Potatoes increased fivefold and hay one third, and turnips introduced. Geese decreased.

(dd) The stock of sheep are increased, and altogether preserved from the rot, since the inclosure. Turnips and grass seeds have increased tenfold.

(ee) Before the inclosure 1400 sheep, of a small, inferior kind, were kept, solely for the purpose of manuring the land by penning; not one in 50 of which was fattened for the market. At present 600 sheep, of the Leicestershire breed, are yearly sent fat to market. The whole inclosure, excepting 60 acres, being thrown into *three* farms, which before consisted of *eleven*, it is the general opinion that fewer store pigs and cattle are reared, and also that somewhat less cheese is made.

(ff) Turnip and clover husbandry introduced with the inclosure: first year, turnips; second, barley; third, clover; fourth, wheat; fifth, pulse; sixth, wheat. On the dry soil I have grown twelve bags of three bushels (nine gallons) each, per acre, over twenty acres at a time. Upon another piece of the same measure only ten bags, but on the wet parts the produce does not average more than five bags. (gg) No one article of human sustenance hath been diminished by inclosing, except a race of diminutive, half-starved sheep, which, about every third or fourth year, were annihilated by the rottenness of a wet season. The wool was trifling which they produced, and the sheep scarcely ever became fit for the butcher. And sufficiently clear it is, that the turnips, clover, &c. and other seeds which are now produced yield fat lambs and fat sheep, calves, and milk annually in a tenfold degree to their former produce.



(hh) Potatoes and turnips increased.

(ii) From unfavourable seasons, crops of grain have fallen short since the inclosure.

(kk) Not yet inclosed.

---

Such then is the result of those inclosures; and from which it appears that the general produce in corn and cattle, of arable and pasture, has, in consequence, very materially increased. Instances here occur where there hath been no increase, but decrease; but the few cases where this is to be met with are balanced by a great variety of others, in which fat stock has been multiplied, the produce of the dairy very much augmented, and the growth of grain largely increased.

A. Y. Jun.

## TIMBER.

**M**R. JEBB, of Egham, sowed acorns 43 years ago; one of the trees is now (1800) five feet three inches in circumference at five feet from the ground, another five feet one inch.

Larch, in 35 years, four feet one inch; but on these clay bottoms they die generally in about forty years.

Chesnut sown forty years, five feet.

A cedar of Lebanon, sown at Copt Hall in the spring of 1747, and transplanted by John Conyers, Esq. December 1750, measures in circumference, 18 inches above the ground, 11 feet 8 inches; 6 feet higher, or  $7\frac{1}{2}$  feet from the ground, 10 feet 2 inches.

The same gentleman has about 400 acres of Epping Forest, or what is commonly called the forest, from contiguity and being open to the deer, in his manor of Epping, upon which the wood is his, subject to certain rights, or rather custom, of the poor taking underwood. They used to mangle and destroy it in such a manner that no tree could ever rise: but some years ago he established and enforced a regulation by which he required all who wanted wood to apply to a person appointed to receive their applications, and he cut it himself, and delivered it at

their doors, but allowed no one to help himself. By this means the young oaks got up under the security of the bushes, and there is now a very fine growth of young trees, of an age to bear and drop their acorns, for the future supply of an immense quantity of timber. Mr. Conyers remarks, that in all forests where you want to preserve timber, you must preserve bushes for it's protection whilst young, without which every effort will be vain. He incurs a considerable expence by this system, but the growth of timber will by and by amply repay it.

Timber thrives remarkably well here: 100 acres of land, considered as very poor from it's yielding only rabbits, was offered 50 years ago by Mr. Conyers's father, on a lease of 40 years, for 2s. 6d. an acre, and refused: he planted it; and it is now a very fine wood, abounding with immense firs of every sort, oak, ash, elm, and all sorts of trees, of a most vigorous, lofty, and *profitable*, as well as beautiful growth, yielding 20s. an acre in timber and underwood. The soil agrees so well with wood, that every thing is of a remarkable growth; *arbor vitæ*, &c. &c. and a cedar of Lebanon, for it's age, far exceeding all I have seen.

## COMMON THISTLE.

THE *carduus arvensis* of the accurate Dr. Smith's *Flora Britannica*, just published, Mr. Crowe has found means of nearly destroying. His arable fields, by good husbandry, are quite free; but land which he had laid down to grass had millions come. His method has been to mow them down when fairly in blossom; but carefully before seeding to leave them four inches high, and immediately to roll with a large and heavy wooden roller, drawn by two horses, four times up and down and twice across. It was dry weather on the whole, but there had been showers. It destroyed 49 in 50.

---

## WATERED MEADOW.

MR. ROWLEY, of St. Neot's, has 20 acres of watered meadow, floated by two carriers, one on each side, and a drain in the middle; but the breadth being too great, the panes should be more numerous: however, the advantage is found to be very great. It was made in 1796 by a person from Mr. Buckley's, in Leicester-

shire. Mr. Rowley having had his lands valued in 1799, this meadow was laid at 3l. an acre; and the adjoining one, of the same quality, except with regard to water, at 30s. It was sheep-fed in the spring; and in that of 1798 it carried 120 ewes and lambs, and 60 shearlings, for five weeks, which, at 6d. a week (as beginning in April), comes to 22l. 10s.; in 1799, 110 ewes and lambs; and in 1800, 130, but a flood drove them out. The produce of hay was two tons an acre. Immediately after clearing, the land should be flooded, and then fed with beasts.

Mr. Rowley is now preparing a machine for watering 71 acres more: it is a double pump, erecting by Mr. Rastric, which works in two wells. The estimate is 103l. but may cost, probably, 150l.

---

## WELLS.

**L**ORD HARDWICK has dug several wells at Wimpole, generally about 144 feet deep; at which depth he gets through the *gault*, or blue clay, and coming to gravel, the water rises powerfully; in one of them it arose to the top, and has overflowed in a constant stream ever since; it was dug two years ago: it yields a slightly-

chalybeat water, impregnated with something which gives a martial flavour a little resembling Harrowgate water.

---

### WILTSHIRE SHEEP, 1800.

**MR. BRAMSTON**, of Oakley Hall, near Basingstoke, is a great advocate for this breed of sheep, on comparison with the South-Downs which have been brought into that part of Hampshire. He buys ewes which fat their lambs by the end of June to 30s. value, and themselves by Michaelmas to 45s. and even 50s.; their fleeces, eight or nine to the tod, at 36s.: while some neighbours who have South-Downs do not get more for their lambs than 24 or 25s. Individually taken, this produce is great; but the question rests on the breadth of land necessary to support them.

---

### IRRIGATION.

**MR. COKE**, of Holkham, has brought out of Somersetshire a person (Mr. Smith), at very high wages, for making an experiment on wa-

tering; and not having land in his own occupation adapted to it, he made the first works on the farm of a tenant, Mr. Reeve, at Wigton. Mr. Reeve, being in company with some other farmers, among whom was Mr. Ives, of Burnham, a tenant of Lord Walpole, gave an account of the method pursuing. Mr. Ives, on returning home, reflecting on the position of a seven-acre upland pasture, conceived that it might be irrigated in the manner described, and next morning he collected his men and went to work, dammed the stream, and threw the water accordingly over the land in question. Mr. Coke, riding that way soon after with Mr. Crow, was surprised to see, what he had never done before, a meadow watered in his vicinity; he went immediately to the farmer to make inquiries, who recited the occurrence which led to the exertion. Mr. Coke observed, that the capability was so obvious, that he was surprised he had not attempted it before: *Lord, Sir* (answered Ives), *I should as much have thought of carrying the water into my garrets.* Thus it is with half the world, they want to be taught to think and to see; and of such infinite advantage it is to a country to have a man in it capable of introducing new practices, and willing to be at great expences to effect what farmers cannot do. Norfolk has reason to congratulate herself in the

possession of this most liberal patron of every agricultural improvement that promises real utility to the country.

---

### RED WILLOW.

**A**N extraordinary instance of this plant thriving where nothing else would come is to be seen at Sir H. Mildmay's, at Dogmersfield, in Hants. The Basingstoke canal passes through his farm; and at one place the soil thrown out is a clay so steril, that in eight years not a sign of vegetation is to be seen on it, not a plant of any sort of grass, not a weed of any kind: but some red-hearted willows, being stuck in, have flourished as well as on land contiguous where none of this clay was laid. A remarkable fact, and which may be a very useful one in other situations, as it certainly is here.

---

### MISCELLANEOUS NOTES ON CATTLE.

**A** SHORT-HORNED beast belonging to John Wing, Esq. of Thorney Abbey, was sold by Mr. Earl, of Smithfield, March 17th, 1800, for 100l.



It was bred and fed by Mr. Wing, and was six years old the 28th of February preceding the sale.

The Duke of Bedford has had Suffolk cows, and approves of them for milk.

Mr. Stanley, of Paxton, Hunts, has several very good ones, and finds them excellent milkers.

The Dutchess of Manchester has several, and they are the best in her Grace's dairy.

Lord Hardwicke, at Wimpole, in 1790, took a cross of Holderness on the common Cambridgeshire cows, and in 1794 tried Jersey cows; and by far the best effect has been produced by the last-mentioned mixture.

Mr. Sturley, of Thornage, has two of the finest beasts of this breed I ever saw; one, proposed to be shown at Smithfield next Christmas, is five years and a half old, the other four years old. They were bred by Mr. John Harris, of Hilderston, near Foulsham. Mr. Sturley has had the first two years and a half. The general opinion is, that he weighs now 110 stone. If he had killed him three months past, he could have sold him all round at 9d. per pound.

AN INQUIRY INTO THE STATE OF  
THE COTTAGERS IN THE COUNTIES  
OF LINCOLN AND RUTLAND.

BY MR. ROBERT GOURLAY\*.

**I**N order to examine the state of the cottagers in these counties, and to inquire what were the advantages said by certain writers to attend the renting of land and keeping cows by the poor, it was necessary to take a journey solely for this purpose. I left London the 27th of December, 1800, and the next day reached Grantham. I shall insert the accounts of the cottagers in the different parishes in the order in which I received them ; premising that I went from cottage to cottage for the particulars, and consulted resident farmers, &c. relative to more general circumstances.

\* It is with singular pleasure that I insert this most valuable paper, which explains, by means of numerous facts, a method of supporting the village poor, to their own great comfort, and to the effective reduction of the poor rates. This work was never favoured, perhaps, with a more important communication.

A. Y.

BELTON.

About two miles from Grantham, to the north, the river Witham, running from Grantham, passes through the parish from south to north. The soil to the east of the river is very sandy, becomes a good loam on the side of the hill to the east, and at the top of the hill it is shallow over limestone. The parish is bounded on the east by the Roman road, which runs in a strait line over what was open heath, though now generally enclosed, to the Humber. The soil of this parish on the west of the river Witham is strong clay. It contains about seventeen hundred acres, and is wholly the property of Lord Brownlow and the rector. His Lordship and his forefathers have always encouraged cottagers, and have allotted a pasture for the cottagers, of 150 acres, on the western side of the parish, upon which each cottager has the advantage of keeping either two horses, or four beasts, or twelve ewes and lambs, and of cutting two loads of gorse for fuel. The cottages are 26 in number, and to 10 of them Lord B. has been able to attach three or four acres of land, to enable them to cut hay for their cows. In the summer they have an opportunity of de-

pasturing them in his Lordship's park from old May Day nearly to new Michaelmas Day. Lord Brownlow having found that the repairs of the cottages were neglected when left to the tenants of them, has taken the repairs upon himself, and made an addition for it to their annual rent. He has also in this parish, and in all others where he has cottages, taken them from the farms, to which many of them had been attached, and made the tenants of them to hold immediately of himself from year to year, as do the farmers, there being none of them on lease.

I was in the greater part of these cottages ; they are in general comfortable, and some of them exceedingly so ; they consist commonly of a kitchen, three bed chambers, and one or more store places ; each has an oven, but, to save fuel, several families bake their bread, &c. in one, and the different ovens are heated by turns. The appearance of the furniture bespeaks no want ; on the contrary, a good fire (though coals are by no means cheap here) and healthy, cheerful countenances, with abundance. The situation of these cottagers, indeed, is too favourable to come into a general estimate ; but it may point out that happiness and those blessings with which the neighbourhood of a great house should never fail to be accompanied.

*Cottagers.*

Names.	Land.	Stock.	Fam.
Thomas Holland	cot and gard.	_____	2
William Wilson	do. and 8 acres	2 cows, 1 heifers, 1 pig, and 16 sheep	3
William Wilcox	do. and 3 acres	2 cows, and 1 pig	3
Widow Holland	cot and gard.	1 cow and 1 pig	5
B. Wilkinson	do. and 3 acres	2 cows, 1 heifer, 1 pig	
— Spur	do. and 2 acres	1 cow and 1 pig	
Robert Dey	cot and gard.	_____	6
John Clarkston	ditto	1 pig	2
B. Wilkinson, sen.	ditto	_____	2
Benj. Pickering	ditto	_____	6
Widow Smith	ditto & 3½ ac.		
John Wright	cot and gard.		
John Matcin	do. and 9 acres	1 cow, 1 heifer, 1 pig	3
William Holland	cot and gard.	_____	2
— Reynolds	ditto	_____	6
Michael Grant	ditto	_____	2
William Clay	ditto	1 pig	2
William Vendine	ditto	_____	3
John Wilson	do. and 2 acres	2 cows, 1 pig	9
Tho. Dickenson	do. and 8 acres	2 cows, 1 heifer, 17 sheep, and 2 pigs	6
Eliza Rood	cot and gard.	_____	2
Widow Sailes	do. and 3 acres	2 cows, 2 pigs	4
John Edinburgh	ditto & 3½ ac.	2 cows, 1 pig	4
— Mason	do. and 3 acres	2 cows, 2 yr-olds, 5 sheep	5

None of the above get any thing from the parish.

HARLANTON.

This parish lies about two miles south-west of Grantham. It is mostly the property of D. Gregory, Esq. It may contain about 285 people, of whom 26 are cottagers who rent land, &c. Mr. Gregory has given to these some of the best land in the parish, and laid it out in the

most convenient manner for them, each having his piece divided into two enclosures, one for summer pasture, the other for winter keep. The people of the parish are all satisfied of the utility of the practice; and say, that was it more general, 'it would encourage industry, preserve 'quietness, and lower the poor rates.' About six years since a common of from 3 to 400 acres was enclosed, which decreasing the number of cows, has been a mean of raising the rates; at an average of eight or ten years back, these may have been about 2s. in the pound. The following is the number of paupers in each of the last ten years, and the expence incurred by them in rates.

	No. of Poor.			Expence.		
In 1790	—	6	—	£. 26	19	3
91	—	8	—	30	6	11
92	—	7	—	40	18	5
93	—	9	—	44	12	9
94	—	10	—	58	10	1½
95	—	6	—	48	18	6½
96	—	9	—	67	4	7½
97	—	6	—	26	14	0
98	—	7	—	40	12	0
99	—	12	—	57	13	10

The cottages here run upon the extremes; some of them very indifferent, others on too

extravagant a plan. None of these people have any thing from the parish, and seem hurt when the question is put to them. Those who have more milk, &c. than they themselves require, supply their poorer neighbours, and are in that respect very useful to the public.

*Cottagers.*

Names.	Land.	Rent.	Family	Stock.
	Acres.	£. s.		
Wm. Burges	6½	12 12	4	2 cows, 1 pig
John Jenmiles	6½	15 0	5	3 cows
T. Bottomly	8	—	2	1 cow, 1 pig, 1 horse
John Crow	7	14 14	—	3 cows
John Beason	16	20 0	8	2 cows, 1 horse
Wm. Rollins	4	10 0	2	1 cow, 1 pig
J. Moons	—	11 0	6	1 cow
William Best	36	52 0	8	2 cows, 3 horses
Rich. Lewty	8½	13 0	4	3 cows, 1 heifer, 1 pig
Rich. Becraft	13	28 0	1	4 cows, 16 or 18 sheep
Tho. Beason				
Joseph Barnes	9	18 0	5	3 cows, 1 calf, 1 pig
Joseph Lord	—	—	5	2 cows, 2 pigs

ASLACKBY.

In this parish, which consists of upwards of 5000 acres of tolerably-good grazing land, worth, on an average, about 20s. per acre, there are 76 families, of whom 11 are cottagers, keeping each a cow in the way following. The great desideratum is hay for winter; they therefore

mow their little close, consisting of three or four acres, and agist their cows in summer with the graziers, formerly at 1s. 6d. but now at 2s. per week: by this mean they are enabled to feed one pig each at least, most two, which is a great help to their families, and tends to keep down the price of butchers' meat. Formerly there were a greater number of cottages and nearly twice the number of cows kept in this parish.

76 families; 11 with cows, 65 without.

Of the remaining 65 families, before *this* year there were not more than four or five, and those mostly widows, who wanted relief; but now the number is increased to ten or twelve families which receive weekly collection. This is not altogether to be attributed to want of cottages, but to the awkwardness of last harvest, whereby the labourer was prevented from saving any money, being then, from the great loss of time, but barely able to maintain his family. But it is worth observing, that *there never was a cottager with land here* who received collection; which shews the excellence of the plan, and it's great efficacy in keeping down the poor rates.

Last year the poor rates were 1s. 1d. in the pound; but this year, most probably, will exceed 1s. 6d. which is very high here, for so few inhabitants.



## OSBORNBY.

This parish, which is three miles north of Folkingham, was enclosed about five years ago. The extent of it is about 1400 acres, and the rental 1000*l*. Poor's rate last year was 2*s*. 6*d*. in the pound. The soil is various; of the good land 4½ acres may keep a cow and a pig. There are seven labouring people who have land and keep cows, &c.; they are in general reckoned more industrious than those who do not.

Names.	Land.	Rent.	COWS			pigs	fam.	REMARKS, &c.
			£.	s.	d.			
Christ, Coxon	Ac. 5 cot. & gar.	9 9 0	2	1	5			When necessary agists a cow at 2 <i>s</i> . 6 <i>d</i> . a week.
Wm. Barber	3 & ditto	6 0 0	1	0	4			Gard. very small and land bad.
John Barber	could not	learn these	2	2	4			
John Johnson	5	1 <i>l</i> an ac.	2	0	4			Agists occasionally, 2 <i>s</i> . 6 <i>d</i> . wk.
John Bacon	4 cot. & gar.	5 11 6	1	0	8			
Wm. Higgins	4 & ditto	7 7 0	1	2	4			Agists 14 wks. at 2 <i>s</i> . 6 <i>d</i> . a week.
W. Thornby	5 & ditto	5 0 0	1 & heif		5			Do. occasionally, at 4 <i>s</i> . cow & heif.

The cottages (which in general are very indifferent), with a garden, would let from a guinea and half to two guineas.

## HÖRBLING.

This parish is three miles east of Folkingham; contains 1440 acres, and 360 people, of whom six receive regular assistance from the parish. At Easter 1799 the poor's rate was 1s. 1d. last year it was 1s. There are 10 cottagers who keep cows; their landlord, Mr. Brown, has set apart a piece of ground for this purpose, divided into two, one half for pasture, the other for hay; an acre and half in each for each cow. The cows run in the pasture promiscuously from the 12th of May till Martinmas or Christmas, when sheep are turned in, three for each cow, till the 25th of March; they who have no sheep let their privilege for 6d. per week. Some who have, buy lambs in April, let them run in the lanes during summer, and give them their spare milk. All the cottagers have gardens, and most of them a home close of from half an acre to an acre; one or two have some land besides.

The houses here are almost all of clay, and though several are cracked quite through the walls, and very tottering, the inhabitants are contented with them. None of these cottagers are paupers, but some of them, with many more in the parish, had flour sold them at a reduced price during the scarcity.

Names.	Rent.	Stock.	Tam.
	£. s. d.		
Eliza Delawaters -	-	1 cow, 5 pigs, 3 sheep	4
John Howit -	10 7 0	2 cows and 1 pig	4
Eliza Weathers -	3 13 0	1 cow, 2 pigs, 3 heifers	5
William Sutton -	7 5 0	2 cows	6
J. Taylor -	6 6 0	2 cows	3
Samuel Witherington -	3 18 0	1 cow and 2 pigs	3
John Field -	3 13 0	1 cow	4
William Broad -	8 8 0	1 cow and 1 pig	6
Eliza Bothroyde -	17 0 0	2 cows, 1 pig, 2 heifers	4
John Sutton -	4 0 0	1 cow, 1 pig, 6 sheep	4

SCREDINGTON.

This parish is nearly five miles north of Folkingham; was enclosed about five years ago; contains, as near as could be ascertained, 3000 acres, and 230 people. There are nine pauper families, who regularly get assistance from the parish. The poor's rate in 1798 was 1s. 4½d.; in 1799, 1s. 6½d.

Names.	Land.	Rnt.	Stock.	£	REMARKS. &c.
	Ac.	£. s.			
S. Ryler	4 cot. & gar.	5 17	1 cow, 1 heif.	4	The three first have right to pasture a beasts each on a common pasture of 15 ac. bad land.
J. Jellion	8 and ditto	7 18	2 cows	3	
W. Gibson	4 and ditto	6 16	1 cow, 1 heif.	3	
H. Starcey	3 and ditto	5 0	1 cow	1	Agrees his cow in summer, costs 36s.
J. Watson	7 and ditto	6 0	1 cow, 1 heif.		Ditto, costs 40s.
			1 pig		
T. Gibson	6½ and ditto	6 5	2 cows, 1 pig	4	
J. Johnson	6½ and ditto	6 5	2 cows	3	

The whole make a general complaint of the badness of their land. None have parish assistance.

Good bricks are made here, and several well-built houses are of that material; but the greater part are tenements of clay.

### BURLEY, RUTLANDSHIRE.

This parish contains about 153 people, exclusive of Lord Winchilsea's household. There are in it twelve cottagers who keep cows, &c. and the soil is well adapted for that purpose. Ten have gardens only. The average rent of the land here may be 16s. per acre. The poor's rate for the two last years was 4d. in the pound.

Names.	Land.	Rent.			fam.	beasts	pigs	sheep	hor.	
	<i>Acres</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>						
Joseph Cooper .	4	6	0	0	2	1	0	4	0	Nothing from the parish.
Richard Cole .	7	12	4	0	3	2	1	7	0	
William Canner	3	4	17	0	4	1	0	0	0	
John Dain .	7	8	12	0	2	2	2	12	0	
*John Dalby .	18	18	11	0	2	5	1	13	0	
*John Healy .	20	22	0	0	6	3	1	21	0	
*Thomas Healy	21	27	1	6	4	4	0	27	0	
†E. Mills, widow	10	21	9	6	5	2	0	3	0	
William Orton .	10	14	10	0	2	3	0	18	0	
John Spring .	9	14	0	0	4	4	0	16	0	
‡Wm. Sowell .	3	4	17	0	6	0	0	0	0	
*Robert Wright	24	26	18	0	4	2	1	0	6	

\* John Dalby, John Healy, Thomas Healy, and Robert Wright, though they rent so much, have all been quite common labourers, but have raised themselves by unremitting industry, and they now work at jobs and various labour as industriously as any in the parish.

† Eliza Mills, widow, is an innkeeper. House large.

‡ William Sowell's cow, not thriving, was sold about two months ago, since which he has been ill off for milk; will do his best to get another by spring.

Here I may remark how generally happy and comfortable are the cottagers at Burley: provided with neat, well-contrived houses, and gardens conveniently laid out, they have a pride in keeping the first clean, and the other in nice trim. Contented with their own situation, they extend their charitable wishes to their less-favoured fellow creatures. Several of them exclaimed "How happy the country would be if all proprietors were like Lord Winchilsea."

## EGLETON, RUTLAND,

Contains about 123 people; 16 cottagers keep cows, &c. The soil in general is red loam, well enough adapted for cow pasture, and may rent, at an average, a guinea per acre. The poor rate, at Easter 1799 was 4 $\frac{1}{4}$ d. in the pound; in 1800 was 8d.: this rise was occasioned by an accidental charge that year.

Names.	Land.	Rent.	cows	pigs	hor.	fam.	REMARKS.
	Acres.	L. s. d.					
Henry Beaver	2 1-4th	7 16 0	2	—	1	5	Nothing from the parish. Is a baker, and uses his horse for carrying bread to customers
Wm. Mould	3	5 2 0	1	—	—	4	Nothing from the parish
Abr. Seaton	3-4ths	9 10 0	2	1	—	3	Ditto
Thomas Scott	1 1-half	4 0 0	1	—	—	4	Ditto
Ral. Hammon	2 1-half	7 0 0	2	1	—	5	Ditto
John Bryan	2 1-half	6 0 0	1	1	—	3	Ditto. Usually keeps 2 cows
W. Colinwood	3	6 0 0	2	1	—	3	An old man in this family has 2s. a week from the parish
Alice Rippon	2	3 8 0	1	—	—	1	Nothing from the parish
John Peat	2	5 3 6	1	—	—	4	Ditto
Tho. Woods	3 1-4th	9 6 0	1	—	—	8	Ditto. Usually keeps 2 cows
Wid. Adcock	4	8 0 0	2	—	—	3	Ditto
Robt. Broome	1 3-4ths	3 1 6	1	—	—	3	Ditto
Wm. Homes	1 1-4th	4 14 0	—	—	—	2	Do. Has no cow, but will soon
Robt. Carter	4	10 12 0	2	1	—	2	Ditto
Wid. Hives	3	5 5 0	1	—	—	3	Ditto
Peter Neale	3	3 15 0	1	—	—	7	Since the scarcity has had 1s. a wk. from the parish. The children young, the man rather indolent, the wife a trollop
	42	98 0 0	21				

The summer pasturage is included in the above rents: suppose a gait for each cow, 2s.

Unless that of the last person, all the cottages here are very neat and clean. The cottagers all feed one or more pigs ; but about this time they are either sold or killed for their own use, and in either way greatly assist the family.

#### HAMBLETON, RUTLAND,

Contains about 330 people. 33 cottagers keep cows. The soil in some parts is a blue or white clay, rather wet ; but in general is a red loam, and fit for cow pasture. Average rent a guinea per acre. In a field set apart for the purpose, the cottagers may agist their cows for 1l. 1s. a head, or three sheep, in summer ; one bullock or two sheep in winter. The poor rate at Easter 1799 was 9d. in the pound, last year the same.

The same observation respecting pigs, &c. at the bottom of Eggleton return, applies to this parish. The cottagers of Hambleton rear their calves also, bringing them, in a few weeks, to the value of three or four pounds, or even more ; producing from economy itself a sum which, added to a cottager's usual income, will enable him to weather much adversity ; and which being gained under the eye of the family, and by many privations of his wife and children, the most regardless drunkard dare not squander in the ale house.

Names.	Land.	Rent.	cows	pigs	sheep	REMARKS.
	Acres.	L. s. d.				
Wm. Tyres	7 1-half	8 15 0	1	1	5	Nothing from the parish. Keeps a horse
Wm. Watkin	21	21 7 8	4	1	15	Do. do. Carpent. Is industrious
John Reeve	10 1-half	13 3 0	4	—	15	Do. House better than common
Edw. Watkin	12	12 2 0	3	1	20	Do. Shepherd. Is industrious
Henry Broom	7	7 7 0	2	—	8	Nothing from the parish
John Percival	8 1-4th	10 0 0	3	—	10	Ditto
Henry Willmot	19	20 10 0	4	—	31	Do. Carpenter. Is industrious
Thomas Love	11 1-half	14 3 0	4	—	20	Nothing from the parish
Rich. Roberts	6	7 0 0	2	—	5	Ditto
G. Woodcock	7	7 3 0	2	—	3	Ditto
Wid. & J. Bull	16	17 0 0	4	1	20	Ditto*
Tho. Tomblin	9	9 4 0	3	—	4	Ditto
Jonath. White	6	6 8 0	1	—	4	Ditto
William Hill	7	8 18 0	2	1	7	Ditto
John Vines	6 1-half	7 2 0	—	—	8	Ditto
James Carter	6	7 17 6	1	1	2	Ditto
John Exton	7	8 10 0	2	—	7	Ditto
Ann Hailes	8 1-half	9 3 0	3	—	5	Ditto
Christ. Love	14	14 0 0	2	—	4	Ditto†
William Scott	4	5 5 0	1	—	6	Ditto
Robt. Faulkes	3	4 4 0	1	—	7	Ditto
James Peak	3 1-4th	7 13 0	2	—	7	Ditto
Rob. Gregory	7 1-half	8 8 0	3 & calf	—	4	Ditto
G. Clements	3	4 16 0	1	—	4	Ditto
M. Tomasman	3	2 16 0	1	—	1	Ditto
Eliza Watkin	7 1-half	7 5 0	2	—	2	Ditto
Tho. Walker	5 1-half	6 6 0	2	—	4	Ditto
Widow Hill	—	21 0 0	2	—	30	Ditto
	226	256 0 0	62			

N.B. Vincent Percival, John Woodcock, Peter Haddon, and John Powell, from home.

\* John Bull, labourer, is a very hard working man. His ancestors were cottagers, and built the house he now lives in in the year 1620, and always rented land.

† Christopher Love worked at harvest work in Cambridgeshire for 50 successive harvests; left off last year, being 74 years of age.

In the column 'Land,' a cow gait is put down one acre.

No instance for many years of any cottager's rent, in the parishes of Bussey, Hambleton, Eggleton, and Greetham, being in arrear. They pay as much for their land as the farmers.

I visited the parishes of Manton, Brook, and Bronston. The first contains about 200 people, but no cottagers with cows, &c. It's poor rate.

at Easter 1799, was 1s. 1½d. in the pound; last year, 1s. 9½d.; nearly treble that of Eggleton, adjoining it, where cottagers *are allowed* cows. In Brook there are four or five: poor rate 1s. population about 100.

#### EMPINGHAM, RUTLAND,

May contain about 740 people, 23 of whom keep cows, &c. and may be considered cottagers. The parish was enclosed about five years ago; at which time, care being taken of the cottagers, and their number rather increased, *the expence* of maintaining the poor was lowered. At Easter 1799 the poor's rate was 9d. in the pound; in 1800, 10½d. There is a common pasture for the convenience of the cottagers, &c. containing 74 cow gaits, &c.; also a meadow for hay, and small closes laid out for those who may wish some tillage land. In general the soil of the parish is creech on lime stone; good, convertible land: that of the cow pasture is of middling quality, in some parts heathy, but answers the purpose well enough.

All the cottages of this parish are in good repair, and do much credit to the proprietor. Most of the cottagers plough some land, though their livelihood does not rest on that: they join one another in equipping a team.



Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	£. s. d.					
Thomas Hill	14 xx	14 0 0	1	1	10	—	2
Widow Bland	17 xx o	17 0 0	1	2	—	2	5
John Broom	17 xx o	16 10 0	2	2	—	1	4
Stephen Brown	19 xx o	16 0 0	2	2	8	2	7
Thomas Bryan	11 xx	12 0 0	2	3	8	—	8
John Corby	from home						
John Gower	16 xx o	15 10 0	2	7	—	1	2
Robert Islip	15 xx o	17 0 0	1	—	—	1	8
Henry Ives	8½ xx o	10 0 0	2	1	—	1	2
Wm. Redmile	18½ xx o	17 0 0	1	3	—	2	7
Tho. Palmer	3 x	could not ascertain	2	1	—	—	4
Ma. Robinson & Wm. Archer	21 xxxo	19 0 0	3	2	12	2	7
Thomas Royce	17½ xx o	18 0 0	3	1	—	1	7
John Scott	12 xx o	15 0 0	3	2	12	2	9
Edward Tewson	20 xx oo	18 0 0	2	1	—	3	6
William Thorpe	8 xx	12 0 0	3	4	—	—	7
Wm. Wallace	12 xx	12 10 0	2	1	—	1	4
William Parker	21 xx o	18 0 0	2	1	—	1	6
Thomas Collins	6 xx	8 0 0	3	1	—	—	6
William Dance	x	4 0 0	1	—	—	—	5
Wm. Fancourt	xx	6 0 0	2	—	—	—	1
John Ellis	6 x	7 5 0	1	1	—	—	7
	259	262 0 0	41				

Nothing from the parish.

N. B. In the column 'Land,' a cow common is denoted by x, a horse common by o.

LYNDEN, RUTLAND,

May contain about 90 people; cottagers keeping cows, 10. Poor's rate, at Easter 1800, was 5½d. in the pound. Thomas Barker, Esq. the proprietor, is a warm friend of the cottage system; and to whoever can procure a cow, he gives the means of keeping it. The cottagers are sensible of his care and attention, and seem willing

VOL. XXXVII. No. 214. M m

to repay him with good conduct and gratitude. There is a common pasture for 18 cows, consisting of 28 acres; its soil, chiefly clay, is tolerably dry, and does for the purpose, though it would be much better, perhaps, if it were to be under the plough a few years. Throughout the parish the soil is various. Average rent per acre, 19s.

Names.	Land.	Rent.	cows	pigs	shp.	family.
	Acres.	£. s. d.				
Henry Sidney	9½	7 6 0	3	0	6	3
Wm. Hodgekin	3	2 2 0	1	0	2	5
Henry Grant	7	5 9 6	2	0	0	2
John Bull	14	11 0 0	4	0	0	5
Rich. Shillaker	2½	2 10 0	1	1	2	5
Peter Hill	2½	2 14 0	1	0	0	3
Robert Hill	the no. lost	2 12 0	1	0	1	4
Jn. Bloodsworth	3½	4 0 0	1	0	2	5
• Andrew Hand	4½					
• Richard Sidney						
	2	35	14			

Nothing from the parish.

\* The account of land, stock, &c. of these two was lost by an accident.

#### BRAUNSTON, RUTLAND,

May contain about 370 people; eleven cottagers have land, and keep cows, &c. This parish is now open, but, it is thought, will be soon enclosed. Last year the poor's rate in the pound was 9s.; five or six years ago it generally ran about 5s. This high rate is to be accounted for, from the low rent of open fields (11s. per acre at an average), which an enclosure would nearly double, from the great population of the parish,

and it's not affording employment for all it's inhabitants. That cottagers keeping cows do not increase the poor's rate will be seen below.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	£. s.					
Nathaniel Atton	9	11 5	1	—	—	1	5
*Robert Allet	—	—	1	1	—	—	3
*William Cooke	11	—	1	—	6	—	3
John Hart	15	9 0	1	—	—	2	6
Robert Good	4	4 0	1	1	3	—	5
† John Skerth	4½	9 1	2	—	40	—	5
§ John Shipley	10	10 0	2	—	3	—	2
John Walker	16	8 8	1	—	—	—	3
William Hill	12	10 0	3	1	30	—	6
** John Clarke	8½	6 4	—	1	—	—	2
§§ Robert Sharpe	½	4 15	1	1	—	—	5

Nothing from the parish.

\* Robert Allet and William Cooke's houses are their own; each agists his cow at 1s. 6d. per week.

† John Skerth has 32 of his sheep kept on hired common at 2s. per annum each; eight on that common (fallow of the parish) to which his cottage gives him right.

§ John Shipley's house his own.

|| William Hill has 24 sheep on hired common or fallow, the rest on his own right.

\*\* John Clarke usually kept a cow; will provide one soon, finding great inconvenience when without.

§§ Agists his cow in summer at 2s. per week; in winter buys hay, which costs in general 3l. 10s.

## LANGHAM, RUTLAND,

Contains about 450 people; twenty-five are cottagers, with land, cows, &c. For the convenience of these is a cow pasture for 80 beasts; three sheep are reckoned equal to a cow; and in winter one sheep is grazed upon it for each cow, &c. The soil, in general, through the parish is of a red colour, part wet and part dry, and an-

swers either for tillage or pasture; renting at an average 1l. per acre. The poor's rate at Easter 1800, 1s. 2d.

Several in this return will be observed to have no cow. They usually kept one, but accident, or the pressure of the times, has deprived them of it. The want is severely felt, and will be made up as soon as better times, industry, and saving will permit.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	£. s.					
Widow Thorpe	3½ xx	8 5	2	—	—	—	1
Edward Dalby	10 xxxx	15 3	4	—	11	—	2
Wm. Goodwin	½ x	4 3	1	—	—	—	2
Wm. Thorpe	5 xxxx	13 0	4	—	—	—	7
*Widow Rowe	3 xx	—	2	1	2	—	4
Wm. Dawson	2 x	3 0	2	1	—	—	3
John Haley	½ x	1 17	1	—	—	—	6
Hum. Chambers	xx	2 0	—	—	—	—	4
†C. Wiggington	2 x	2 10	—	—	—	—	5
James Smith	3 xx	8 1	2	—	—	—	2
Wm. Goodwin	15 xx	19 10	4	—	16	1	4
Wm. Bryan	2½ x	5 10	1	—	—	—	4
Wm. Biddle	x	1 5	1	—	—	—	9
Wm. Stubbs	10 xx	17 14	3	—	—	—	6
Wm. Berridge	8 xx	11 12	2	—	11	—	5
Wm. Hubbard	8	10 6	—	—	—	—	7
*Benj. Stimson	7 xx	—	—	—	—	—	4
Widow Almond	3 xx	9 0	3	—	—	—	1
Cha. Rivel, sen.	5 xx	9 12	3	—	—	2	3
John Lowth	2 xxx	6 10	1	—	—	—	2
†C. Rivel, jun.	2½ xx	4 0	3	—	—	—	3
Cha. Hubbard	2 xx	4 15	2	—	—	1	7
‡Daniel Harris	13½ xxxx	17 2	7	1	—	1	9
John Sewal	½ x	4 0	1	—	—	—	2
†Samuel Skirwin	8 xxx	13 10	4	1	6	—	6

Nothing from the parish.

\* Could not ascertain Widow Rowe's and Benj. Stimson's rent.

† Charles Wiggington's, Charles Rivel's, jun. and Samuel Skirwin's houses their own property.

‡ Daniel Harris has a considerable dairy; uses his horse for carrying it's produce to market.

GREETHAM, RUTLAND,

Contains about 400 people ; cottagers renting land and keeping cows, &c. 17 ; for whose use there is a common pasture, divided into three enclosures, and into which the stock is shifted by turns : the soil of this is cold clay, that of the parish in general is crech upon lime stone. Average rent 12s. per acre. At Easter 1799 the poor's rate was 2s. 1d. ; at Easter 1800, 3s. 3d.

Except the common pasture above mentioned, the land of this parish is not adapted for permanent grass. Some of the cottagers have small spots of sainfoin; but in general they must have recourse to tillage for winter keep, &c. which I believe they find little profit in ; and I thought I could discern the bad effects of the system in *their houses and families.*

While languid indolence but too frequently presents itself in many cottages elsewhere, those of Rutland buzz with industry ; the happy effect of an excellent institution, called *The Society of Industry*, which I understand was established at Sleaford about fifteen years ago, and has been chiefly patronized by Lord Winchelsea. It gives premiums to the most expert spinners,

and by those means has excited the most lively emulation and assiduity. Children from six to eight or ten years old can earn in this way, when the trade goes well, as many halfpence per day. Unfortunately the trade is much subject to vary; and the drawback from the price of labour, when this is low, having a name (*Scotch*), adds to the misfortune. Common work on common material should double the value; one pound of wool worth 1s. spun into Jersey, should give 2s.: so bad is the trade just now, that it gives 1s. 8d. only.

Names.	Land.	Rent.			cows	pigs	shp.	hor.	fam.
	Aeres.	£.	s.	d.					
J. Eaglesfield	5½xx	7	6	0	1	0	0	1	9
Tho. Stubbs	26 xx	24	18	0	2	1	4	3	8
Tho. Lock	5	5	0	0	2	1	0	0	3
John Wing	7 xx	10	0	0	2	3	0	1	8
Wm. Tyler	6½	6	0	0	0	0	0	1	7
John Harding	2 xx	5	5	0	2	0	0	0	2
John Idle	5 xx	6	17	0	2	0	0	0	5
Tho. Osborne	6½	5	0	0	1	1	0	2	5
John Percivil	5½xx	6	19	6	2	1	0	0	6
Henry Kew	10	6	0	0	3	1	0	0	6
H. Draycotte	9 xx	10	14	0	2	2	5	1	5
Francis Idle	5 xx	8	10	0	2	2	0	0	5
R. Wing, sen.	16 xx				1	1	0	1	5
R. Wing, jun.	26 xx	25	0	0	4	3	18	4	4
Wm. Flint	6½xx	9	4	0	2	1	5	0	7
John Seerson	7½xx	9	10	0	2	1	0	0	4
Henry Collins	6½xx	8	10	0	3	0	0	1	6

Nothing from the parish.

COLSTERWORTH, LINCOLNSHIRE,

Contains about 630 people; 14 cottagers, with land, cows, &c. The greater part of the parish is open-field. The soil is chiefly a shallow crech on lime stone, rent 5s. an acre. There is an enclosed cow pasture, of 90 acres, on which the cottagers, &c. may agist their stock on moderate terms. At Easter 1799 the poor's rate was about 3s.; in 1800, about 4s. per pound.: the low rental, and great population (which has been increased by many settlements having been gained by service in the numerous inns) are the causes of this high rate.

Two years ago this parish could have produced a more respectable list of cottagers: about that time some land, upon which many rented a few acres and kept cows, &c. was sold. The new proprietor no sooner got possession than he cast out these little dependants. I visited the poor people, their tale was told with little variation: they used to keep one, two, or three cows, &c. which were of the greatest service to their families; the land had been the stay of them and their forefathers time out of mind; they willingly would have paid the highest rent for it, but were denied.

Their cows, &c. have of course been sold; all are needy, and some have actually had parish assistance.

Names.	Land.	Rent.	cows	pigs	hor.	fam.
	Acres.	L. s. d.				
William Bellamy	1	5 5 0	1	0	0	7
Eliza Wright	11 xx	8 18 0	2	1	0	7
William Haims	4 xx	4 0 0	0	0	0	2
William Senescall	24 xxxxx	9 0 0	2	1	2	7
John Bully	6 xx	9 10 0	1	0	0	4
William Broughton	12 xx	15 15 0	2	0	0	3
William Taylor	11 x	11 15 0	1	0	3	6
• Widow Perceval						
John Watley	4 x	3 0 0	0	1	0	5
Philip Harris	3 xx	2 10 0	1	0	0	2
John Chapman	5 x	3 0 0	1	0	0	6
Robert Falconer	14 x	12 0 0	4	0	0	2
Thomas Pacey	2½x	3 3 0	1	2	1	7
William Seerson	13 xxxx	8 0 6	1	1	2	3

Nothing from the parish.

\* The widow Perceval being unwell, I could not ascertain; but has nothing from the parish.

#### SOUTH HYKHAM, LINCOLNSHIRE,

Contains about 83 people; six cottagers keep cows, &c. The soil in general is wet and heavy; much of it subject to be flooded, and will poach if stocked; some, however, is dry enough for cow pasture. Average rent 12s. an acre, of a moor of from 2 to 300 acres, miserable soil, upon which the farmers and cottagers turn some beasts. At Easter 1799 the poor's rate was 1s. 8½d.; 1800, 2s. 2½d. The levy is made



upon a very old valuation, of course the rate appears much higher than it really is.

Names.	Land.	Rent.	cows	pigs	lam.	REMARKS.
	Acres.	£. s.				
Nicholas Maltby	3½ xxx	6 0	2	1	6	Nothing from parish.
William Maltby	3 xxx	2 5	2	1	3	Ditto.
Edward Smith	3 xxx	2 5	0	0	2	Ditto. Usually keeps a cow, will again as soon as possible.
Rich. Whitehead	3½ xxx	2 5	3	0	3	Nothing from parish.
P. Longmate	26 xxx	16 0	6	1	6	Ditto.
*Rich. Priestly	—	—	1	1	3	

\* Richard Priestly has no assistance from the parish, further than being allowed to inhabit one of the poor's houses, which otherwise would stand unoccupied, and to run his cow on the common; in winter he buys hay, &c. He had once regular assistance from the parish, but does not want it now, his friends having enabled him to buy a cow, although he maintains a grown-up son, weak and helpless.

The x denotes a cow gait in the muir.

# AUBOURN, LINCOLNSHIRE,

Contains about 154 people, of whom twelve are cottagers keeping cows, &c. The soil of this parish is in general wet; average rent 14s. About the village the gardens seem remarkably good land, and there may be a sufficiency of dry land fit enough for the cottagers' cows. Last year and the year before the poor's rate was 4d. in the pound.

Names.	Land.	Rent.		cows	pigs	fam.	REMARKS.
	Acres.	£.	s.				
George White & Tho. Topum	—	—	—	—	—	—	Living in a remote part of the parish, could not see them.
William Wright	7	5	0	3	2	5	Nothing from the parish
Joseph Kirk	7	3	10	2	0	4	Ditto.
* Wm. Johnson	1	3	10	0	1	5	Ditto.
Alex. Holton	4 xx	6	10	1	0	3	Ditto.
† Rob. Longmate	2½ x	3	0	1	1	6	
Widow Crossbie	3½ xx	—	—	4	2	1	Ditto. Could not as- certain her rent
Benj. Reinalds	8	6	0	1	0	6	Nothing from the parish
William Cook	4 xx	3	2	3	2	6	Ditto.
Gabriel Good	2 xx	5	0	1	1	4	Ditto.
† John Dolton	—	—	—	1	0	4	Ditto.

\* William Johnson in general has a cow, but not having land to grow winter keep, and unable to buy hay, had to sell this winter; will get another in the summer.

† Robert Longmate has 1s. a week from the parish during the scarcity; he is an old man and has a *young wife*, also many young children.

‡ John Dolton's house is his own, and he agists his cow throughout the year for 50s.

N. B. An x denotes a cow gait on a common of very indifferent quality.

☞ Besides the land marked above, some of the cottagers have little spots in the fen.

I took a rout by the parishes of Bracebridge, North and South Hykham, Auburn, Harmiston, and Waddington. Of the cottagers, &c. in two of these is a particular account annexed. In North Hykham and Harmiston there is not more than one cottager each, having a cow. In the first, the poor's rate last year was 3s. in the pound; in the second, 9d. upon the rack rent. Waddington has five or six cottagers who keep cows, none of whom have any thing from the parish; but so small a number, in a parish of 600 peo-

ple, cannot much affect the poor's rate, which was last year 1s. 6d. in the pound.

## FISKERTON, LINCOLNSHIRE.

In this parish there are 260 people ; 16 cottagers with cows, &c. It has much fen, rent 8s. an acre, and a deal of moorish soil ; but also a considerable quantity of tolerably-good land, fit for cow pasture, and with the last may average 15s. The poor's rate, for several years back, has been about 1s. 6d.

Names.	Land.	Rent.	cows	pigs	sheep	REMARKS, &c.
	Acres.	l. s.				
J. Holesworth	—	2 2	1	0	4	Has no land, and is obliged to agist his cow at 2s. per week, and buy hay, &c. Has two pecks of potatoes in the week, and a few coals, from the parish
Widow Dove	6	5 5	3	1	3	Nothing from the parish
Wm. Scorer	3 1-half	2 17	1	1	0	Ditto
John Hinton	0 1-half	—	0	0	2	Ditto. House, garden, &c. his own. Not having land sufficient, and finding the expence of buying hay too great, has to sell his cow
Widow Boys	3	—	1	0	0	Nothing from the parish. House and land her own
T. Thomson	8	4 10	0	0	3	Nothing from the parish. House his own. Had a cow usually, and will again have one
W. Brompton	2 1-half	3 0	1	0	2	Nothing from the parish. Agists a cow at 20s. for the summer
Ste. Skippers	1	—	1	0	7	House his own. Has two pecks of potatoes in a week, and some coals from the parish.
Wm. Hinton	8 1-half	8 10	2	0	2	Nothing from the parish
Wm. Brompton, jun.	2	4 10	1	0	0	Ditto
Wid. Golding	0	7 0	1	0	4	Ditto
W. Thackouse	18	11 10	3	4	10	Ditto
J. Whitelaw	3 1-half	6 6	0	0	5	Nothing from the parish. In general has had a cow, and will strive to get another
John Hurton	3	2 0	1	1	0	Nothing from the parish
Rob. Tindel	20	12 0	6	1	20	Ditto
Rich. Wright	5	5 0	1	0	5	Nothing from the parish. His house his own

Several of the cottagers in this parish are in the same predicament, with respect to land, &c. as those of Willingham; and it is surprising that so few, during such pinching times, and at a season when many of the cows, being half starved, give none, or but little milk, should require assistance.

CHERRY WILLINGHAM, LINCOLNSHIRE,

Contains about 80 people; cottagers with cows, &c. five. A considerable part of the parish is fen, worth 10 or 12s. per acre; but there is also much land dry and good enough for cow pasture, rent 18 or 20s. an acre. The poor's rate, at Easter 1799, was 5d. in the pound; at Easter 1800, 4½d.

Names.	Land.	Rent.	cows	hor.	fam.
	Acres.	L. s.			
William Abraham . .	2	3 3	1	—	5
John Woodhouse . .	2	3 2	1	—	7
Thomas Tye . . .	—	1 10	1	4	4
Thomas Bell . . .	—	1 10	1	—	7
Samuel Dowman . .	—	—	1	—	3

} Noth. from  
the parish

Being ill provided with land, these cottagers have not that benefit from their cows they otherwise would have; they run them in the lanes during summer, and generally buy food for the winter keep: but however scanty their supply of milk may have been, the want of it

would certainly have brought several of them on the parish.

## REEPHAM, LINCOLNSHIRE.

This parish contains about 180 people ; there are nine cottagers who have cows, &c. The soil in general is clay or strong loam, very well adapted for cow pasture, and renting, on an average, 20s. an acre. At Easter 1799 the poor's rate was 6½d. in the pound ; in 1800, 8d.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	£. s.					
Jos. Woodhouse	10	14 0	2	1	0	1	8
*Wm. Swanwick	18	13 10	3	1	16	1	8
Samuel Medley	3	7 0	1	1	4	0	9
+John Norris	6	—	1	0	0	2	4
†Francis Levesige	—	—	1	1	0	0	4
‡Robert Nicholson	—	—	1	1	0	0	2
§William Hodson	2	3 3	2	1	0	2	10
¶George Bell	9	16 0	3	1	8	1	3
Widow Brown	7	9 0	2	2	0	0	2

Noth. from the parish

\* William Swanwick's house is his own.

+ John Norris's house and land are his own.

† Francis Levesige and Robert Nicholson have their houses, and cows kept, as part of their wages.

§ William Hodson's house his own. He agists the cows for 7s. per week.

¶ George Bell's rent is high, part being orchard.

## FILLINGHAM, LINCOLNSHIRE,

Contains upwards of 200 people ; 19 cottagers have cows, &c. The soil of the low part of the parish runs into clay ; much of it very fit for

cow pasture; on the high grounds it is more adapted for tillage; average rent 15s. per acre. The poor's rate in the pound was, at Easter 1799, 11d.; 1800, 11½d.

Names.	Land.	Rents.	cows	pigs	shp.	hor.	fam.
	Acres.	L. s. d.					
William Brougham	5 x	6 10 0	2	0	0	0	6
Widow Bell	2 x	3 10 0	1	0	0	0	1
Joseph Bell	2 x	3 10 0	1	1	0	0	6
* William Burr	- - -	0 10 0	1	1	0	0	2
† Thomas Carter	5 x	0 0 0	2	1	7	1	6
William Clayton	2 x	5 16 0	1	0	3	0	5
Widow Cocking	7	8 5 0	2	1	5	0	4
Robert Dickson	4	7 0 0	1	0	0	0	7
† Thomas Eyles	xx	0 0 0	2	1	0	0	3
John Emingham	4 xx	7 0 0	2	0	0	0	5
¶ Widow Gollan	8 xxx	11 11 0	4	1	0	1	4
§ Edward Hydes	4	5 0 0	0	0	11	0	2
John Lyon	8 xx	12 0 0	4	0	15	0	5
Widow Roberts	2 x	4 1 6	1	1	0	0	1
Christopher Smith	- - -	0 0 0	1	0	8	0	3
** Joseph Storr	6	6 0 0	2	1	6	0	3
†† John Storr	- - -	0 10 0	2	1	0	0	4
Widow Woodhead	4 xx	6 17 0	2	0	6	0	4
Benjamin Roberts	10 x	8 10 0	1	0	0	0	8

Nothing from the parish.

\* William Burr has only a house and garden. Agists his cow in summer and buys hay.

† Thomas Carter has land &c. in part of wages.

‡ Could not ascertain Thomas Eyles's rent.

¶ Widow Gollan uses her horse in bringing home groceries, which she retails.

§ Edward Hydes' cow died some months ago; his wife being infirm and unable to manage a dairy, he does not think of getting another, though very useful.

\*\* Joseph Storr's house his own.

†† John Storr's cow kept in part of wages.

#### GLENTWORTH, LINCOLNSHIRE,

Contains about 150 people; 15 cottagers who have cows, &c. Soil of the low part of the parish is clay, very well adapted for cows; that of the

high ground does better for tillage; average rent 10s. an acre. Poor's rate in the pound about 2½d. besides about as much which is paid out of the rental to a charity establishment; altogether 4½d. in the pound.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	£. s. d.					
Joseph Barton	15½	12 15 0	5	2	10	0	5
Joseph Walker	11	10 5 0	3	1	12	0	5
Richard Evinson	8½	8 17 0	3	1	0	0	3
T. Featherstone	4	4 0 0	1	1	0	0	3
*John Gilliatt	14½	13 16 0	5	2	4	0	4
Robert Hurd	6½	6 12 0	2	1	4	0	2
†Richard Key	18½	22 0 0	2	2	10	2	3
Thomas Kirk	3	3 3 0	1	1	0	0	2
Widow Lyon	4½	4 14 6	2	1	2	0	3
Samuel Rogers	4½	4 18 0	2	1	0	0	6
John Smith	2	1 2 0	1	1	0	0	1
John Simms	4½	4 17 0	1	1	2	0	3
William Wood	3	3 1 0	1	1	0	0	3
Sarah Wright	6	5 8 0	2	0	2	0	1
‡John Vickers	2½	2 18 0	1	1	0	0	3

Nothing from the parish.

\* John Gilliatt has been unable to work for some time, and without his cow must have had parish assistance.

† Richard Key has a mill, which increases the rent; uses his horse in driving his trade.

‡ John Vickers of late has had 2s. a week from the parish, infirmity having for some time kept him from labour; his wife is silly.

## INGHAM, LINCOLNSHIRE,

Contains about 220 people; 24 cottagers with cows, &c. In the low part of the parish the greater part of the land is cold clay, subject to tread, or be poach'd, if pastured in wet weather; just about the village, however, there may be a sufficiency of good, sound land to produce milk

for all the inhabitants. On the cliff, or high part of the parish, the soil varies from a sand, shallow upon limestone, freestone, or gravel, to a tenacious, stubborn clay; in general it will admit of turnips being eaten off with sheep, but does not answer for pasture. Average rent 12s. an acre. Poor's rate in the pound, for several years back, has been about 1s. and that upon a valuation made twenty or thirty years ago.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	lam.
	Acres.	L. s.					
*William Booth - - -	1	—	1	2	—	—	4
Benjamin Dowman - -	house and gard. only	1 16	1	—	—	—	4
Francis Ankings - - -	4	5 0	1	1	8	—	4
William Medley - - -	—	—	2	1	—	—	4
Williby Hall - - -	1 x	3 0	1	—	—	—	4
Robert Wright - - -	2	5 0	1	—	3	—	4
Thomas Bell - - -	7 xx	12 0	5	—	10	—	4
† Jacob Squires - - -	1	8 3	1	1	—	—	4
† Robert Wilkinson - -	3	4 0	1	1	2	1	4
William Ironshaw - - -	—	1 4	1	—	—	—	4
John Wilds - - -	7	7 0	1	1	—	—	4
§ William Sharp - - -	—	2 2	1	—	—	—	4
Robert Trever - - -	—	—	1	1	—	—	4
Jonathan Maltby - - -	—	—	1	1	—	—	4
William Walsham - - -	—	—	1	3	—	—	4
John Penning - - -	—	—	1	1	—	—	4
James Masham - - -	—	—	1	1	—	—	4
John Turner - - -	—	—	1	—	—	—	4
John Bower - - -	—	—	1	1	—	—	4
Thomas Wolflet - - -	—	—	1	1	—	—	4
Richard Pool - - -	—	—	1	1	—	—	4

Working from the parish

\* William Booth's house and close his own. Runs the cow in the lanes, and buys hay in winter.

† Jacob Squires, besides his house and land, gets as much hay as his cow can consume from his landlord.

‡ Robert Wilkinson's house and an acre and quarter of land his own property.

§ William Sharpe runs his cow in the lanes in summer, and in winter buys hay.

|| Robert Trever and the eight following have their houses, and cows kept, by their masters in part of wages.

John Oatland, Widow May, and Joseph Woolhouse were from home; could not, therefore, get particulars, but was told none of them had parish assistance.



HEMSWELL, LINCOLNSHIRE,

Contains 242 people; cottagers with cows 24; was enclosed 17 years ago, at which time a pasture and meadow ground being allotted for the cottagers who had cows, the condition of these was bettered, and their number not decreased. On the cliff, the soil is not adapted for permanent grass. The low part of the parish is strong loam on a cold clay bottom, good and dry enough for pasture; rent 10s. or 12s. an acre. Poor's rate in the pound 10½d.

Names.	Land	Rent.	cows	pigs	shp.	hor.	fam.
		£ s. d.					
*Fran. Hartcliff	3 x	—	1	0	0	0	3
Widow Martin	4½ x	6 6 0	1	0	0	0	2
William Hunt	3½ x	4 4 0	1	0	0	0	2
William Gledall	3 x	3 7 0	1	1	0	0	5
John Hespin	3	4 10 0	1	1	0	0	3
Thomas Curtis	18	15 0 0	3	2	0	1	6
William Barr	3	4 0 0	1	1	0	0	4
Joseph Codd	2½	7 0 0	1	1	0	0	5
John Wilson	3 x	6 0 0	1	1	0	0	7
† William Codd	2½	—	1	1	0	0	5
James Harpum	3 x	3 17 6	1	0	0	0	2
*Widow Lighton	10	—	2	2	2	0	2
John Trever	3 x	4 14 0	1	0	0	0	3
William Smith	2½	5 0 0	1	1	0	0	4
Joseph Newton	3 x	4 0 0	1	1	0	0	3
John Frith	3 x	4 12 0	2	0	0	0	3
John Gibson	5 xx	10 0 0	2	0	6	0	3
Jonathan Wells	7 xx	8 0 0	2	2	0	0	9
Wm. Carter, sen.	5 x	9 0 0	1	0	3	0	2
Wm. Marshall	1	3 6 0	1	1	0	0	6
† Joseph Harrison	—	2 2 0	1	1	0	0	6
Thomas Clark	3½	4 4 0	1	1	0	0	4
John Cook	—	—	1	1	0	0	4
William Carter	—	—	1	1	0	0	2

Nothing from the parish.

- \* F. Hartcliff's and Widow Lighton's rent could not ascertain.
- † William Codd's house freehold.
- ‡ Joseph Harrison's cow kept in part of wages.
- || Cook & Carter have their houses, & cows kept, in part of wages.

## GRAYINGHAM, LINCOLNSHIRE,

Contains 92 people; in soil resembles Hemswell. The proprietor of this parish has been exceedingly attentive to it's inhabitants; one family only is without the means of keeping a cow, &c. While he has by this conduct increased the stock of happiness and comfort, very discernible in the people and houses here, he has probably not diminished his rental, poor's rates never having got above 3d. in the pound. There are twelve cottagers who keep cows, &c. most of them by renting gaits (expressed by x in the column "Land") in a pasture and meadow set off for the purpose.

Names.	Land.	Rent.	cows	pigs	hor.	fam.	
John Walker -	x	1 17 0	1	2	0	2	} Nothing from the parish.
Thomas Stevinson	x	1 5 0	1	0	0	2	
John Jackson -	xxx	6 1 6	2	1	1	5	
Widow Newam	xx	3 3 0	2	1	0	1	
William Cundil	x	2 2 0	1	0	0	2	
John Marris -	xx	3 10 0	2	0	0	5	
Thomas Kirby	xxx	5 18 0	3	2	1	8	
Thomas Moor -	x	1 5 0	1	0	0	6	
Philip Clixby -	x	1 5 0	1	0	0	3	
*Widow Martin	$\frac{1}{4}$ & house	4 10 0	2	1	0	2	
*John Marshall	$\frac{1}{4}$ &c.	5 5 0	2	0	0	7	
William Coop -	$\frac{1}{4}$ xt	4 14 6	2	2	0	5	

\* Widow Martin and John Marshall agist their cows in summer and buy hay in winter. Not so well off as others.

As a contrast to the parishes of Hemswell and Grayingham, that of Corringham, adjoining, may be mentioned; it has very few cottagers with cows, and the poor's rate is 3s. 6d. in the

pound. Willoughton and Blyborough, in the same neighbourhood, have fewer than the first-mentioned; rates 16d. and 18d.

## SPRIDLINGTON, LINCOLNSHIRE,

Contains about 120 people; six cottagers who keep cows, &c. This and the three following parishes are laid across three and the same stretches of soil, extending south and north; upon the middle one of these the villages are situated; it is sandy loam, fit either for tillage or pasture, but very narrow; in Spridlington 50 or 60 acres. East of this is cold clay, which treads in wet weather and rots the sheep. The west side is stony, indifferent crech, with many springs; will grow seeds for one or two years, but afterwards will run to hard, coarse, unprofitable herbage. Spridlington was enclosed 20 or 25 years ago, before which most of the people kept cows; there were few poor and the rate was a mere trifle. At Easter 1799 the poor's rate was 12½d. Easter 1800, 1s. 3d.

Names.	Land.	Rent.		cows	pigs	shp.	hor.	fam.
	Acres.	£.	s.					
Thomas Vickers	12	6	10	2	1	5	0	2
John Crow	12	8	5	2	1	4	0	10
Robert Page	15	12	10	1	2	7	1	4
George Vickers	11	10	0	2	0	3	1	4
Thomas Bastale	11	10	0	1	0	0	0	2
*W. Collingwood	—	0	10	1	0	0	0	3

} Nothing from the parish.

\* Collingwood has a house and small close; agists his cow in summer, in winter buys hay. N n z

## SAXBY, LINCOLNSHIRE,

Contains about 60 people; seven cottagers keep cows, &c. Poor's rate, Easter 1799, 1s. 3d. 1800, 1s. 6d.

Names.	Land.	Rent.		cows	pigs	shp.	fam.
	Acres.	L.	s.				
John Jones -	6	3	4	1	1	0	6
Stephen Emmerson -	12	15	0	3	0	18	3
James Smith -	7	5	0	1	1	0	2
John West -	12	7	10	2	0	4	4
William Vicker -	14	7	4	2	1	5	4
*Richard Nutt -	—	—	—	1	0	0	5
*Robert Carrett -	—	—	—	2	2	0	9

Nothing from the parish.

\* Richard Nutt and Robert Carrett have their houses, and cows kept, in part of wages.

## OUMBY, LINCOLNSHIRE,

Contains about 140 people; cottagers keeping cows, &c. 10. Poor's rate in the pound was last year 1s. 6d.

Names.	Land.	Rent.		cows	pigs	shp.	hor.	fam..
	Acres.	L.	s.					
William Coleson	7	6	10	2	1	3	0	7
George Barr	15	11	11	2	2	18	1	3
John Harforth	12	9	0	2	1	1	0	3
Samuel West	3½	3	6	1	0	0	0	3
John Coleson	8	6	6	1	0	11	0	9
William Calvert	10½	11	4	2	3	7	0	6
Edmund Ely	4½	5	5	1	1	8	0	4
Joshua Taylor	11	7	0	2	0	3	0	3
*George Golding	—	—	—	1	1	0	0	8
*George Beach	—	—	—	1	2	0	0	6

Nothing from the parish

\* George Golding and George Beach have their houses, & cows kept, in part of wages.

NORMANBY, LINCOLNSHIRE,

Contains about 220 people; cottagers keeping cows, &c. 15. Upon a very old and low valuation, the poor's rate in the pound was, at Easter 1799, 4s. 3d.; at Easter 1800, 4s. 9d.

Names.	Land.	Rent.	cows	pigs	shp.	fam.
	Acres, &c.	L. s.				
* John Hilton	—	—	2	2	0	6
* William Potts	—	—	1	3	0	5
† David Barr	3½	—	1	0	0	3
† Thomas West	3½	—	1	1	0	4
† John Richardson	3	—	1	0	0	6
George Noble	4	3 15	1	3	0	5
John Holland	5	7 10	2	6	3	4
John Dickson	9	8 5	2	1	1	8
† William Barr	3	5 10	0	0	0	6
Thomas Hudson	house & gar.	2 0	1	1	0	6
* Jos. Scarborough	ditto	2 0	1	2	0	7
* Thomas Taylor	—	—	1	0	0	7
* William Craft	—	—	1	1	0	4
* Joseph Wright	house & gar.	2 10	1	1	0	6
* Chri. Coltsworth	—	—	1	1	0	4

Nothing from the parish

\* Hilton, Potts, Scarborough, Taylor, Craft, Wright, and Coltsworth have their cows kept, and most of their houses also, in part wages.

† David Barr, West, and Richardson pay for their houses and land a small annual quit rent and renewal every seven to the Dean and Chapter of Lincoln.

† William Barr usually keeps a cow.

[To be continued.]

**SUSSEX WESTERN AGRICULTURAL  
SOCIETY.**

At a Meeting of the above Society for arranging the Prizes and Premiums, and the Distribution thereof, for the present Year, the following Resolutions were agreed to.

1. **T**HAT five guineas be given to the owner of the best bull, four years old.

2. That three guineas be given to the owner of the second-best of the same age.

3. That five guineas be given to the owner of the best bull three years old.

4. That three guineas be given to the owner of the second-best of the same age.

5. That five guineas be given to the owner of the best bull two years old.

6. That three guineas be given to the owner of the second-best of the same age.

7. That five guineas be given to the owner of the best heifer three years old that shall have produced a living calf, and shall be in milk at the time of shew.

8. That three guineas be given to the owner of the second-best ditto.

9. That five guineas be given to the owner of the best heifer two years old.

10. That three guineas be given to the owner of the second-best ditto,

11. That five guineas be given to the owner of the best three-year-old South-Down ram, last lambing time.

12. That two guineas be given to the owner of the second-best ditto.

13. That five guineas be given to the owner of the best two-year-old South-Down ram, last lambing time.

14. That two guineas be given to the owner of the second-best ditto.

15. That five guineas be given to the owner of the best one-year-old South-Down ram, last lambing time.

16. That two guineas be given to the owner of the second-best ditto

17. That four guineas be given to the owner of the best pen of twelve South-Down Ewes, viz. four of three years old, four of two years old, and four of one year old.

18. That three guineas be given to the owner of the second-best pen of the same description as the former.

19. That two guineas be given to the owner the third-best ditto.

20. That one guinea be given to the owner of the fourth-best ditto.

The two and three-year-old ewes must have produced and reared a lamb, and the ewes must have been kept with the flock sheep till within three days of the shew.

21. That each candidate shall produce a certificate of the age of his stock shewn, with the name of the breeder, and an account of the manner in which the same has been kept for the last two months preceding the day of shew.

22. That each candidate may shew as many cattle or sheep as he please, but shall be entitled to only one prize for the same age of cattle and shew.

23. That three judges for the cattle and three for the sheep be appointed by the committee on the 10th of September next, at the Half Moon in Petworth, at ten o'clock in the forenoon; and that the committee do consist of all the subscribers, seven of whom shall form a committee, if more shall not attend: but no person shall act as judge or vote in the committee on any question in which he is interested.

24. That the judges be requested to assign their reasons for their decisions in the shape and make of the animal to which they adjudge the prize.



The day of shew will be at Petworth on Thursday, the 10th of September next; and the candidates for the several prizes for stock must give notice in writing of their intention of becoming so to Mr. P. Hart, of Petworth, the treasurer, on or before the 5th day of September next; to whom the gentlemen who have not paid their subscriptions, are requested to forward them before the day of shew.

*Ordered,*

That the above resolutions be printed, and five copies delivered to each subscriber.

*N. B. The sweepstakes for the ten best ewe lambs will be continued as usual.*

---

## BEDFORDSHIRE AGRICULTURAL SOCIETY.

ON Friday, 9th of October, the Bedfordshire Agricultural Society held their first annual meeting at the Swan inn, Bedford, which was attended by the Duke of Bedford, Sir George Osborne, Mr. Whitbread, Mr. Higgins, and all the principal agriculturists of the county, and numbers from various parts of the country.

The society adjourned to a field belonging to Mr. Sharpe, within about a mile of the town, for the purpose of being present at the ploughing of the different candidates, for which the society had offered the following premiums:—

Ten guineas to the Bedfordshire farmer who shall produce a plough and team which shall plough half an acre of land in the best and cheapest manner (not less than five inches deep) within the space of three hours and a half.

To the second-best, six guineas.

To the third, four guineas.

To the fourth, two guineas.

To the ploughman who holds the first winning plough, a premium of two guineas.

To the second, one guinea.

To the third and fourth, half a guinea each.

The committee appointed for determining on their different merits were, — Higgins, Esq. of Turvey; Mr. Platt, of Lidlington; and Mr. Inskip, of Warden. In the course of the day various experiments were tried for the improvement of agriculture. The society, amounting to about one hundred, afterwards dined at the Swan inn, the Duke of Bedford in the chair, and after a number of toasts suitable to the occasion, his Grace addressed the meeting in a very neat speech, on the subjects the society had in view; after which he read the report of the com-

mittee, who had allotted the premium of ten guineas to Mr. Foster, of Bedford; of six guineas to Mr. Potts, of Eversholt; of four guineas to Mr. Sharpe, of Bedford; and of two guineas to Mr. Negus.

His Grace then read over the next list of premiums which the society had offered; namely,

To the labourer in husbandry, in Bedfordshire, who shall have brought up the greatest number of children upon the earnings, by labour, of himself and family only, without parochial relief, a premium of five guineas.

And the committee, after examining the different certificates, allotted the premium of five guineas to a man who had brought up eight children without receiving parochial relief, and at proper ages had put them out to different trades. One of the candidates had brought up sixteen children, but unfortunately had on one occasion received twenty shillings from the parish.

The next premiums offered by the society were,

Four guineas to the Bedfordshire labourer in husbandry, who has worked the longest time in the same place without interruption.

To the second, two guineas.

To the third, one guinea.

A premium of four guineas to the Bedfordshire male servant, who has continued for the

greatest length of time in farming service, on the same farm, or with one master or mistress.

To the second, two guineas.

To the third, one guinea.

The first premium of four guineas was adjudged by the committee to a man who had lived forty-nine years. The second of two guineas to a man who had lived forty two years. The third of one guinea to a man who had lived thirty-six years in one place.

The last premiums offered were,—

Three guineas to the Bedfordshire female servant who has continued for the greatest length of time on the same farm, or with one master or mistress.

To the second, two guineas.

To the third, one guinea.

The committee, to their great astonishment, after examining the different certificates, discovered a woman to have lived fifty years on one farm.

His Grace's health was drunk with enthusiastic applause, and this truly laudable society adjourned.

ORIENTAL PLANTS CULTIVATED IN  
THE WEST INDIES.

**T**HE seeds transmitted to the West Indies by the Board of Agriculture are the produce of the island of Sumatra, and have been sent from thence to the Board by Dr. Campbell, an ingenious botanist, in the service of the East India Company. It is presumed, that if the culture of these seeds is properly attended to, plants produced by them will succeed as well in the inter-tropical colonies of Great Britain, as in their native climate; and this opinion is sanctioned by the success of the bread fruit, the mango, the the clove, and various other valuable productions of the East, the culture of which is now established in the West Indies, greatly to the benefit of the inhabitants. The importance of these productions to mankind is stated in the following description that is given of each of them; and it will, it is presumed, justify the Board in requesting, that every person who undertakes to cultivate them, will transmit, as soon as convenient, through his correspondent in London, an account of his success to the President, in order that application may be made to Dr. Campbell for a further supply of such kinds as may be necessary.

The packet marked A, contains an upland, or dry rice, called by the natives *kookoo ballum*, from it's crooked grain, resembling the claw of a dove ; this is more delicate to the palate than that marked on the bag B, called *paddy laye* ; a shorter and lighter-coloured grain, esteemed a stronger and more nutritive food.

Both these grains are cultivated by the natives on the sides of woody hills, which are prepared by felling the trees and cutting the underwood. These, after they have been thoroughly dried by the heat of the climate in the hot season, are fired, and they continue burning for some days, and afford by their ashes a sufficient preparation for the crop ; but no care is taken to stub up the roots, or to remove the half-burnt logs which remain scattered over the surface of the field. On the first symptoms of the approach of the periodical rains, these fields are sown by piercing holes in the earth about half an inch deep and six inches asunder. Three or four seeds are dropped into each of these and then are covered with earth by the pressure of the heel of the operator. From this simple preparation, without further care or concern on the part of the husbandman, a crop from sixty to a hundred fold is reaped in four and a half or five months ; the produce being always larger in proportion as the forest where it has been

sown is older. After this a variety of successive crops are taken from the land, as maize, guinea corn, egg plant, plaintains, indigo, cocos, &c. and last of all sweet potatoes. Further particulars of this series of crops may be seen in Marsden's History of Sumatra.

The bag marked C, contains the *varnish tree*.

This, Dr. Campbell believes to be the true varnish of China and Japan; in which case it will afford a most valuable article of export from the places where it can be cultivated with success, as the varnish may certainly be brought to Europe from the West Indies in tight casks (without losing it's quality), as a coating for wooden wares of all kinds. It grows most readily in marshy swamps near the mouths of rivers, and is not injured by the access of the tide. Dr. Campbell observes that the wood is exquisitely veined, and he conceives that it might be worked up into very durable furniture.

The packet marked D, contains the *candle tree*.

This tree grows on most sorts of soil, and thrives well in exposures too cold for the growth of the cocoa nut. The kernel of this fruit contains abundance of a delicate oil, much used by the natives in cookery of all kinds; and so inflammable are these kernels, that when stuck on a skewer of wood, one above another, it may be lighted like an European candle, and will con-

tinue to burn till all are consumed. In this manner they are used by the natives of the South-Sea islands, who have no other substitute for candles in the houses, and in their evening entertainments of dancing, music, &c.

The bag marked E, contains the *walking cane*.

Dr. Campbell suggests, that the drug called dragon's blood may be, by proper treatment, procured from this plant; and he promises further information on the subject. He refers to Mr. Bryan Edwards, who has stated it in his catalogue of desiderata. It grows wild in thick woods, and may be easily cultivated. Should it be of no other use, it will certainly supply useful hoops for small casks, and pliant withes for binding up in bundles all kinds of coarse materials.

The packet marked F, contains the *gomutu*, a kind of palm.

This inestimable plant grows wild in almost every part of Sumatra, and in all sorts of soil. If, therefore, the seeds vegetate, its cultivation can hardly fail of success.

By cutting through the branches of this tree, intended by nature to furnish flowers and fruit while it is yet immature, a large quantity of juice is procured. This the native receives in vessels fixed for the purpose under the branches that have been cut through. If fermented, this



liquor becomes a strong, pleasant drink, called palm wine; if evaporated, it granulates into a strong sugar; and if distilled, it furnishes an excellent spirit.

The body of the tree is enveloped in a coat of fibres, which is, possibly, the most incorruptible of all vegetable matter. This is the material from which cables and hawsers of the very best quality, both for strength and elasticity, are made. These ropes have, moreover, the property of remaining unhurt either in wet or in dry stowage. It is said that Admiral Ranier lately caused an experiment to be made of the comparative strength of cables of hemp and those of gomutu, in which the gomutu cables were found to be superior. Nor are these all the advantages this valuable tree affords; for when it is old, and no longer productive of wine or of cables, it's trunk, split, and soaked in water, affords from it's pith a kind of sago, if not so palatable as that of the true sago palm, yet certainly both a wholesome and nutritive food.

**A PROPOSAL FOR THE ESTABLISHMENT OF FRIENDLY SOCIETIES, BY ACT OF PARLIAMENT.**

**I.** **T**HAT it may be enacted, and be it enacted, by the King's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons in this present Parliament assembled, and by the authority of the same, that from and after the passing of this act, every parish, separately, or united with any other parish or parishes, under the authority of the said act, shall, for the better maintenance and support of the poor in every such parish or united parishes as aforesaid, establish, maintain, and support, by subscription, and out of the poor rates, friendly societies, in manner following, save and except what is hereinafter excepted.

**II.** And be it further enacted, by the authority aforesaid, that the churchwardens and overseers of every such parish shall, within

days after the passing of this act, convene a meeting of the inhabitants of their respective parishes, in order to establish friendly societies.

**III.** And be it further enacted, by the autho-

rity aforesaid, that the churchwardens and overseers of every such parish or united parishes shall be deemed members of such society for the time being, and by them the said parish or united parishes shall contribute in aid to the fund of such society not more than one shilling and six pence, nor less than one shilling, per head, quarterly, for every member in the society who are not hereinafter excepted.

IV. And be it further enacted, by the authority aforesaid, that a treasurer be chosen annually, by a majority of the members present, at the first quarterly meeting in every year; but no person shall be eligible to be appointed treasurer unless he is possessed of an estate of twenty pounds a year, or five hundred pounds personal property. A salary may be allowed him, at the discretion of the members of the society.

V. And be it further enacted, by the authority aforesaid, that four stewards be chosen for each society by a majority of the members present, whose office shall be to visit and pay the weekly allowance to the sick members: the first steward on the list shall visit the first quarter, and then resign, and so on in rotation; and a new one to be chosen at every quarterly meeting. The steward who visits the sick shall be allowed three pence per mile, from the house

where the society is held, for every visit made to such member.

VI. And be it further enacted, by the authority aforesaid, that every person residing in any parish, and being in good health, and able to maintain himself, and not having more than one child, shall be admitted a member of such society. And any person having more than one child, under certain restrictions, as is hereinafter mentioned, shall also be admitted a member of such society.

VII. And be it further enacted, by the authority aforesaid, that every member belonging to such society shall contribute not more than four shillings, nor less than three shillings, per quarter, to the fund of the society; but no member shall be entitled to any benefit until he has made good one year's subscription. And if any friendly society formed before the passing of this act, shall wish to unite itself to this establishment, it shall be admitted, on condition of paying a sum of money to the fund of the society equal to one year's subscription for each member.

VIII. And be it further enacted, by the authority aforesaid, that in case any member shall, by sickness or accident, be rendered unable to maintain himself, he shall, on application to the acting steward, and being found a proper object,

be allowed not more than eight shillings, nor less than six shillings, per week, out of the fund of the society, during his inability to support himself; but no fraction of a week shall be allowed for.

IX. And be it further enacted, by the authority aforesaid, that every person belonging to such society, and having three children or more, born in wedlock, part of his family, and being unable to maintain themselves, shall be allowed for every such child respectively six pence per week; and also any widow, having one child or more, the husband of whom having been a member of the said society, shall, in like manner, be allowed for every such child respectively not more than two shillings, nor less than one shilling, per week, to be paid monthly, provided the father or mother of such child or children are proper objects to receive such benefit; which money shall issue out of the poor rates, and be paid to the treasurer of such society by the churchwardens or overseers of the parish where such child or children belong.

X. And be it further enacted, by the authority aforesaid, that the father or mother of such child or children shall, out of the aforesaid weekly allowance, keep them decently clothed, and send them to a Sunday or some other school, so soon as the society shall think them

able to be sent ; but if such child or children are not properly clothed for school, the society shall be empowered to withhold a sum, not exceeding three pence per week, for that purpose ; and on refusal of the parent to send such child or children to school, the whole of the allowance shall be withheld by the said society.

XI. And be it further enacted, by the authority aforesaid, that when any person is admitted a member, having two or more children, such person shall not be allowed any thing weekly for such children ; but if such member shall have two children born after he has become a member, then in that case he shall be entitled to be paid for three children, in the same manner as the member is who has one child when admitted into the society ; and so on for any greater number of children born after his admittance.

XII. And be it further enacted, by the authority aforesaid, that if a member is unable to get a certificate from any parish to acknowledge him a parishioner, or if any member is possessed of an estate of five pounds a year, or one hundred pounds personal property, in either case such member shall not be entitled to any weekly allowance for any child or children ; nor shall any parish where such society is formed contribute any thing quarterly for such member ; but he shall, nevertheless, be entitled to all other

benefits, in common with the members of the society.

XIII. And be it further enacted, by the authority aforesaid, that whenever any member, from age or infirmity, shall have received the aforesaid weekly allowance for six months successively, and it shall appear there is no prospect of his recovery, he shall then be paid not more than five shillings, nor less than three shillings and nine pence per week, as a pensioner, during such inability.

XIV. And be it further enacted, by the authority aforesaid, that when any member shall die, a sum of money, not exceeding three pounds, nor less than forty-five shillings, shall be allowed towards the expences of his funeral; and if such deceased member shall have been in the society ten years, the widow of such member, being unable to maintain herself, or if she shall at any future period become unable, she shall, on application to the society, at a quarterly meeting, be allowed not more than two shillings and six pence, nor less than two shillings, per week. And when she dies, a sum, not exceeding forty-five shillings, shall be allowed towards the expences of her funeral.

XV. And be it further enacted, by the authority aforesaid, that if any member shall be guilty of counterfeiting sickness or lameness,

with an intent to defraud the society, he shall, on proof being made, at a quarterly meeting, to the satisfaction of a majority of the members present, be expelled the society.

XVI. And be it further enacted, by the authority aforesaid, that if any member shall neglect to pay his contribution for three successive quarterly meetings, he shall be expelled the society.

XVII. And be it further enacted, by the authority aforesaid, that where the contribution is four shillings per quarter for each member to the fund of the society, then the allowance to a sick or lame member shall be eight shillings per week, and five shillings as a pensioner, and three pounds towards the expences of his funeral, and two shillings and six pence per week for his widow, provided he has been ten years a member in the society, and two shillings per week for the child or children of a deceased member; and if the contribution is three shillings per quarter, then all the lesser sums of money to be allowed, as before mentioned.

XVIII. And be it further enacted, by the authority aforesaid, that a meeting of the treasurer, acting steward, and also the churchwardens or overseers of every parish belonging to such society, shall be held monthly, and every month, for the treasurer to receive and



pay all money respecting the society, and it shall be entered in a book, which shall be open to the inspection of any of the members present; and the accounts shall be balanced at every quarterly meeting.

XIX. And be it further enacted, by the authority aforesaid, that where houses of industry are established by act of Parliament, in any parish or united parishes, such parish or parishes shall not be obliged to establish friendly societies.

XX. And be it further enacted, by the authority aforesaid, that in order to carry this act to the most beneficial effects for the poor, it shall be lawful for the churchwardens and overseers, and stewards of each friendly society, to collect contributions within their respective parish or parishes annually, if necessary, to raise a fund, which shall be appropriated to the purpose of clothing, for service, the child or children of any member belonging to the society, or the child or children of any deceased member, who shall be thought, by a majority of the members present at a quarterly meeting, a proper object to receive such benefit.

XXI. And be it further enacted, by the authority aforesaid, that the members of each society shall meet annually to form rules and regulations for the good government of their respective societies, which may be altered, or new

ones made, as a majority of the members present shall think proper at such annual meeting, provided always they are not contrary to any of the clauses contained in this act.

XXII. And be it further enacted, by the authority aforesaid, that the justices of every county, city, town, or place, within their jurisdiction, be empowered to enforce the due observance of this act; and that two justices shall have full power to order and settle all complaints respecting the nonperformance thereof.

---

By establishments of this kind, the condition of the poor will be greatly meliorated in the following essential particulars:

They will, in effect, establish guardians in every parish to watch over the education and the employment of the poor.

They will tend, in some measure, to equalise the incomes of the poor, in proportion to their wants, by giving particular aid to those who have large families.

They will, by the watchful care of each society over their members, greatly contribute to mend their habits, especially the wives of them, who will have a continual spur to keep their children tight and clean, in order to fit them for school.

They will very much mend the condition of

the poor, by giving them relief in time of sickness, aid in support of a large family, education and clothing to their children, and a comfortable provision in old age.

They will also operate to ease the present great burden of the poor rates, by giving support to the poor in time of sickness or infirmity.

They will prevent the heavy expences attending removals to parishes, each member being obliged to produce a certificate where he belongs.

## NOTES ON SHEEP.

### *New Leicester.*

**A**LL his New Leicester two shears which were sold by the Duke of Bedford in March 1800, went at 5l. 18s. each.

The Duke, in letting tups, abates his tenants 20 per cent. of the price on all above twenty guineas.

Mr. Ground, of Whittlesea, who with his son farms 1200 acres of fen, prefers a cross between New Leicester and Lincoln to either breed pure; the former are too delicate and tender for the fens, and they cannot support both carcass and wool. They breed 500 lambs and fatten 500 ewes and wethers.

Mr. Waudby, of March, who is steward for many considerable estates in Cambridgeshire, is convinced, from all the information he has received, that the whole-bred New Leicesters are too tender for this country in winter. Does not approve of the whole-bred Lincolns, but the cross between answers well.

Mr. Saffery, of Downham, has tried the New Leicester, and remarked them in the farms of various fen farmers; and he is decidedly of opinion that they are too tender for that country in winter; they have always been in poorer condition in the spring than other breeds. He prefers half Lincoln, half Leicester.

Lord Hardwicke, in Cambridgeshire, has crossed the common Welch ewes with New Leicester rams, and found it to answer well. Ewes that cost but 8s. have thus brought lambs worth 16s.

#### *South-Downs.*

Mr. Reeve, of Wigton, tenant to Mr. Coke, of Holkham, was in the system of keeping Norfolk wethers, which he changed for a flock of South-Down ewes, and has since bred as many lambs as he used to buy, besides the other profit of the flock. Perhaps the annals of sheep do not afford a more striking proof of the superiority of one breed of sheep to another.

AVERAGE PRICES OF CORN FOR  
AUGUST, 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	14	2	5	3	4	0	5	7
Middlesex,	14	5	5	8	4	6	5	10
Surry,	14	7	5	9	4	4	6	7
Hertford,	13	2	5	7	4	2	7	2
Bedford,	14	2	10	5	5	1	6	8
Huntingdon,	12	10	6	5	3	1	5	7
Northampton,	13	10	7	6	3	5	6	5
Rutland,	13	0	8	11	4	9	7	1
Leicester,	14	2	7	0	3	11	7	8
Nottingham,	14	4	7	9	4	5	6	11
Derby,	16	9	10	1	5	1	8	0
Stafford,	15	8	8	11	5	5	8	9
Salop,	15	8	9	8	5	0	—	—
Hereford,	16	6	9	7	5	3	8	6
Worcester,	16	4	8	6	5	1	8	4
Warwick,	15	10	9	5	4	7	7	8
Wilts,	14	4	7	0	4	2	7	10
Berks,	14	0	6	11	4	2	6	6
Oxford,	15	2	7	6	4	1	6	10
Bucks,	13	4	7	5	4	6	6	8
Brecon,	15	3	11	2	5	0	—	—
Montgomery,	15	1	—	—	4	9	—	—
Radnor,	17	2	8	10	4	9	—	—

MARITIME COUNTIES.

Essex,	13	5	5	8	3	9	4	9
Kent,	13	4	5	6	3	10	5	5
Sussex,	16	2	—	—	4	4	—	—
Suffolk,	14	7	4	4	3	10	5	2
Cambridge,	13	6	4	7	3	5	5	8
Norfolk,	13	6	5	3	3	6	5	2
Lincoln,	13	7	8	6	3	6	6	6
York,	14	9	7	10	3	9	6	11
Durham,	15	8	6	0	4	11	—	—

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	£.	d.	£.	d.	£.	d.	£.	d.
Northumberland,	14	2	7	4	4	7	9	0
Cumberland,	17	6	8	10	6	0	—	—
Westmoreland,	18	1	10	4	5	11	—	—
Lancaster,	14	11	—	—	5	0	7	0
Chester,	12	9	6	6	4	3	7	0
Flint,	15	6	10	3	—	—	—	—
Denbigh,	15	11	8	9	3	11	—	—
Anglesea,	—	—	8	6	—	—	—	—
Carnarvon,	14	6	8	4	4	3	—	—
Merioneth,	16	9	10	0	4	10	—	—
Cardigan,	17	5	10	0	—	—	—	—
Pembroke,	15	4	9	8	3	0	—	—
Cardmarthen,	16	1	10	2	—	—	—	—
Glamorgan,	15	2	8	9	4	11	—	—
Gloucester,	16	11	10	8	4	5	8	0
Somerset,	16	1	8	7	4	1	8	0
Monmouth,	18	1	8	9	6	0	—	—
Devon,	16	7	8	6	4	1	—	—
Cornwall,	18	9	9	4	3	6	—	—
Dorset,	16	8	9	4	4	6	9	4
Hants,	16	4	7	6	4	3	7	7
General average,	15	2	7	6	4	5	6	11
May	16	3	9	7	4	11	8	3
June	16	1	9	0	4	7	7	10
July	16	10	8	10	4	8	7	8

AVERAGE PRICES OF CORN FOR  
SEPTEMBER 1801.

*By the Standard Winchester Bushel of 8 Gallons.*

COUNTIES INLAND.

	Wheat.		Barley.		Oats.		Beans.	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	10	2	5	0	3	3	5	1
Middlesex,	10	10	5	3	4	0	5	7
Surry,	11	6	4	1	3	10	6	7
Hertford,	10	5	5	5	4	1	6	9
Bedford,	10	3	7	0	4	1	5	6
Huntingdon,	11	5	5	10	2	10	5	8
Northampton,	11	3	6	3	2	10	7	3
Rutland,	12	0	7	3	3	10	6	1
Leicester,	11	8	6	0	3	4	7	9
Nottingham,	12	8	7	10	3	8	6	4
Derby,	12	6	7	8	4	5	7	8
Stafford,	11	10	6	11	4	1	6	9
Salop,	11	2	7	5	4	4	7	8
Hereford,	10	9	6	6	3	9	6	9
Worcester,	12	7	6	5	4	11	7	6
Warwick,	12	9	6	9	4	8	7	7
Wilts,	11	3	6	5	4	2	7	4
Berks,	10	6	5	2	4	0	5	9
Oxford,	12	8	5	7	4	9	6	7
Bucks,	10	4	5	6	3	9	5	11
Brecon,	10	3	5	11	3	1	—	—
Montgomery,	8	8	6	3	3	0	—	—
Radnor,	8	10	7	2	3	9	—	—

MARITIME COUNTIES.

Essex,	10	7	5	9	4	2	4	7
Kent,	10	9	5	0	3	6	4	10
Sussex,	12	5	6	10	4	0	—	—
Suffolk,	11	0	6	3	3	8	5	2
Cambridge,	11	1	5	4	2	8	4	11
Norfolk,	11	3	5	5	3	10	—	—
Lincoln,	11	7	6	6	3	0	—	—
York,	10	10	6	10	3	2	6	9
Durham,	9	4	5	11	3	9	—	—

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	D.	s.	D.	s.	D.	s.	D.
Northumberland,	9	7	4	4	3	8	—	—
Cumberland,	12	3	7	1	4	6	—	—
Westmoreland,	12	11	6	3	4	6	—	—
Lancaster,	10	5	5	10	4	0	5	6
Chester,	10	0	—	—	3	9	—	—
Flint,	11	1	7	9	—	—	—	—
Denbigh,	10	10	7	9	3	7	—	—
Anglesea,	10	0	6	0	—	—	—	—
Carnarvon,	10	3	6	6	3	6	—	—
Merioneth,	10	4	6	3	3	4	—	—
Cardigan,	10	9	6	6	—	—	—	—
Pembroke,	11	2	6	4	2	9	—	—
Carmarthen,	9	11	5	10	2	1	—	—
Glamorgan,	10	2	6	0	2	11	—	—
Gloucester,	13	4	7	4	3	9	6	7
Somerset,	11	7	6	1	3	7	6	7
Monmouth,	10	9	7	1	4	3	—	—
Devon,	11	5	5	6	3	2	—	—
Cornwall,	12	0	6	1	3	3	—	—
Dorset,	11	9	6	6	4	4	7	6
Hants.	12	2	6	2	4	3	7	3
General average	11	1	6	3	3	8	6	4
June	16	1	9	0	4	7	7	10
July	16	10	8	10	4	8	7	8
Aug.	15	2	7	6	4	5	6	11



---

# ANNALS OF AGRICULTURE.

---

## AN INQUIRY INTO THE STATE OF THE COTTAGERS IN THE COUNTIES OF LINCOLN AND RUTLAND,

BY MR. ROBERT GOURLAY,

*Continued from No. 214.*

---

BIGBY, LINCOLNSHIRE,

**C**ONTAINS 158 people; cottagers keeping cows, &c. 18. Poor's rate 6 $\frac{1}{2}$ d. in the pound; has been about the same some years back, and is laid on an old rental. The soil of the parish is various: upon the wold it is light, upon chalk stone; along the top of the cliff it inclines to clay, of little depth, on the same bottom; neither fit for pasture: the low part of the parish is clay and strong loam, in some parts springy, much well enough adapted for pasture. Average rent per acre 12 to 15s. Along the side of the hill where the village is situated runs a

**VOL. XXXVII. No. 215. P p**

narrow tract of black sandy loam, from one to two feet deep, on pure yellow sand, most capital garden mould, and to that purpose it is chiefly applied, each of the cottagers having from one to two or three roods of it for raising potatoes, pot herbs, &c.

Names.	Land.	Rent.	cows	pigs	shp.	fam.
	Acres.	L. s. D.				
John Smith - -	7	7 7 0	1	1	0	4
William Stamp -	7	7 0 0	2	1	0	5
James Spounser -	6 3	6 17 0	2	2	0	7
John Elm - -	7	7 13 0	2	0	0	5
William Gilliard -	7	7 4 0	2	0	0	5
John Kell - -	8	8 8 0	2	3	0	3
*Thomas Horner -	0	0 0 0	2	2	3	6
John Horner - -	7	7 1 0	2	2	0	7
John Burton - -	7½	7 11 0	2	2	0	7
George Smith - -	7	6 18 0	2	0	0	6
Robert Sergeant -	3	3 0 0	1	2	0	7
Bryan Glover - -	7	7 2 0	2	2	0	8
†Fran. Littleworth	3	3 0 0	2	2	0	6
Thomas Raynard -	7	7 5 0	2	1	0	4
*Thomas Knight -	0	0 0 0	1	2	0	3
*Benjamin Jeckyll	0	0 0 0	1	1	0	5
*William Simpson	0	0 0 0	1	1	0	4
John Walker - -	7	7 2 0	2	2	0	2

Nothing from the parish

\* Thomas Horner, Thomas Knight, Benjamin Jeckyll, and William Simpson have their houses, &c. and cows kept, in part of wages.

† Francis Littleworth pays s<sup>d</sup>. for the liberty of running his cows in the lanes.

#### BARNETBY LE WOLD, LINCOLNSHIRE,

Contains about 216 people; 18 cottagers keep cows, &c. The soil of this parish is nearly the same as that of Bigby. The rent per acre may not be quite so much. The cottagers have the

same liberal allowance for garden ground. In both the cottages are remarkably good and comfortable. Last year the poor's rate was 1s. 6d. in the pound.

Names.	Land.	Rent.	cows	pigs	shp.	hor.	fam.
	Acres.	L. s. d.					
Tho. Carlisle	2 x	3 15 0	1	1	0	0	5
Tho. Sweedale	2 x	2 6 6	1	1	0	0	5
W. Atkinson	2 x	2 8 6	1	0	0	0	3
Michael Cook	2 x	2 11 0	1	1	0	0	5
*Wm. Brown	2 x	3 16 0	1	0	0	0	3
Richard Peck	2 x	2 11 0	1	1	0	0	3
J. Abercroft	4 xx	6 0 0	2	1	0	1	8
Wm. Oglesby	2 x	4 10 0	1	1	0	0	2
George Good	1 x	4 0 0	1	1	0	0	3
Fran. Ashton	1 x	3 10 0	1	2	0	0	5
†C. Parker	0	0 0 0	1	1	4	0	3
John Piereson	2 x	3 5 0	1	1	0	0	3
John Dickson	2 x	3 5 0	1	1	0	0	3
†Joseph Potts	0	0 0 0	2	1	0	0	7
Jon. Coleson	1½ x	3 10 0	1	2	0	0	8
J. Hennington	1½ x	3 10 0	1	2	0	0	5
W Brockelsby	2 x	2 11 0	1	1	0	0	7
†Edw. Smith	house and garden	2 10 0	1	1	0	0	4

Nothing from the parish

\* William Brown is a subtenant.

† Parker and Potts have their houses, and cows kept, and Smith has his cow kept, in part of wages.

The x denotes a cow gait.

## GREAT LIMBER, LINCOLNSHIRE,

Contains about 236 people; cottagers with cows, &c. 25. The soil of this parish is various: the greater part is sand and gravel, occasionally running into clay; part is poor, hungry, white gravel: there is little or no land in the parish fit for permanent grass. At Easter

1798 the poor's rate was 2s. in the pound, what it has been since I could not learn.

Names.	Land.	Rent.	cows	pigs	fam.
	Acres.	L. s. d.			
John Hooton -	—	—	1	1	8
Richard Stamp -	—	—	1	2	8
John Short -	—	—	1	1	3
Richard Maddison -	—	—	1	1	3
William Clark -	—	—	1	—	6
Christopher Neel -	4	5 0 0	1	—	5
John Coleson -	—	—	1	1	7
James Brown -	—	—	1	1	5
Robert Stow -	—	—	1	1	3
William Cook -	1 x	3 10 0	1	1	7
John Roebuck -	—	—	1	1	7
Francis Quickfall -	—	—	1	1	2
Christopher Quickfall -	from home	—	—	—	—
* William Blanset -	0 x	2 0 0	1	2	8
* John Hammonds -	0 x	2 0 0	1	1	6
John Gascoin -	—	4 5 0	1	1	3
John Parsons -	from home	—	—	—	—
Robert Britliff -	1 x	2 10 0	1	1	4
Joseph Parker -	—	—	1	1	7
Joseph Hogg -	1 x	2 10 0	1	—	6
Robert Clayton -	—	—	1	1	4
Thomas Gibson -	0 x	—	1	1	2
William Anderson -	—	—	1	1	4
+ John Cutley -	—	—	1	—	4
William Sammur -	did not	find	—	—	—

Nothing from the parish

\* Blanset and Hammonds have winter keep for their cows in part of wages.

+ John Cutley having been for more than a year in a bad state of health, and unable to work, has just now corn and coals allowed him from the parish.

The greater part of the cottagers in this parish have their houses, gardens, and cows kept, in part of wages.

#### KERMINGTON, LINCOLNSHIRE,

Contains about 200 people; cottagers keeping cows, &c. 16. The soil in general is sandy, mixed with flint and common gravel, in some places it runs into clay; will neither stand constant til-

lage nor grass, in three years the seeds disappear and are succeeded by a coarse herbage; some little which was old enclosure continues good in pasture. Average rent 10s. per acre. The poor's rate at Easter 1799 was 4½d. last year 4¾d. The cottagers here live vastly well, even at the present time; almost all have abundance of bacon, each having two pigs to kill about the beginning of the year, weighing each towards 18 stone; some also kill a porker in the spring. Without a cow nothing of this kind can be done. These remarks apply not to the cottagers of Kermington only, but to all having cows, &c.

Names.	Land.	Rent.	cows	pigs	shp.	fam.
	Acres, &c.	L. s. d.				
John Stevenson	2 x	3 10 0	1	1	—	6
John Beck	2 x	2 10 0	1	1	3	4
Daniel Parker	1 x	2 12 6	1	1	2	3
* Joseph Dickson	house & gar.	1 10 0	1	1	4	3
† Geo. Ransom	—	—	1	1	—	4
† Tho. Ransom	—	—	1	1	—	6
William Parr	house & cow kept for	5 0 0	1	1	—	5
Newark Dent	—	—	1	1	—	6
William Myres	2 x	3 10 0	1	—	—	6
Robert Johnson	2 x	3 10 0	1	1	—	3
John Holmes	cow kept for	3 0 0	1	1	2	6
Tho. Grantham	2½	3 0 0	1	1	3	5
Jonath. Bevilier	2 x	3 3 0	1	1	1	4
Tho. Cartwright	3½	3 0 0	1	—	—	2
Edward Kiblock	3½	3 0 0	1	2	—	4
‡ John Hill	cow kept for	2 10 0	1	1	—	3

Nothing from the parish

\* Joseph Dickson has his cow kept in part of wages.

† George and Thomas Ransom have houses and small closes in property. In summer they run their cows in the lanes.

‡ John Hill being lame, has a house from the parish free.

## KEELBY, LINCOLNSHIRE,

Contains 288 people; seven cottagers keep cows, &c. Poor's rate 2s. 3d. in the pound. The soil is chiefly clay and strong loam on gravel and chalk stone; after lying in seeds two or three years, these get out, and for several years following the pasture is bare and of little value; in the end it recovers somewhat. Average rent 10s. per acre.

Names.	Land.	Rent.	cows	pigs	fam.	
•Michael Slate -	_____	_____	1	1	6	} Noth. from par.
•William Gibson	_____	_____	1	1	3	
•John Dann - -	_____	_____	1	1	5	
•William Beechum	_____	_____	1	2	6	
•John Stark - -	_____	_____	1	1	3	
† John Dean - -	house & gard.	1 14 6	1	1	3	
‡ John Ward - -	house & gard.	1 10 0	1	3	4	

• Slate, Gibson, Dann, Beechum, and Stark have their houses, and cows kept, in part of wages.

† Dean agists his cow in summer and winter for ss. per week.

‡ Ward agists his cow in summer at ss. per week, in winter has it kept in part of wages.

## CROXTON, LINCOLNSHIRE,

Contains 78 people; nine cottagers with cows, &c. Poor's rate 7½d. in the pound. The soil in general is cold, poor, clay loam, on various bottoms—chalk stone, gravel, and clay; is unprofitable in grass beyond two or three years.

Names.	Land.	Rent.	cows	pigs	shp.	fam.
	Acres.	L. s. D.				
William Button -	—	—	1	2	2	4
John Booth -	1 x	1 18 0	1	2	—	3
Thomas Bristol -	—	—	1	1	—	3
Joshua Carr -	—	—	1	1	1	6
Thomas Newmarsh	1½	1 15 0	1	1	7	8
William Thomas -	1½	2 2 0	1	2	—	5
Richard Hewat -	—	—	1	2	2	7
William Moody -	1	1 14 0	1	—	—	6
Widow Holmes -	1 x.	2 0 0	1	2	—	5

Nothing from parish

The greater part of the above cottagers have their houses or cows, or both, altogether or in part as wages.

MELTON ROSS, LINCOLNSHIRE,

Contains 102 people; cottagers keeping cows, &c. 16. Poor's rate 10¼d. in the pound. The soil in general is light hazel loam, at different depths, on chalk stone, and, unless a little about the village on a clay bottom, not fit for permanent grass. Average rent about 10s. per acre.

Names.	Land.	Rent.	cows	pigs	fam.
	Acres, &c.	L. s. D.			
John Mundy -	1 x	1 8 0	1	—	4
William Burdas -	1 x	1 7 6	1	1	3
Ambrose Hall -	1½ x	1 10 0	1	2	3
William Marshall -	1 x	3 0 0	1	2	4
William Horn -	—	—	2	4	7
Thomas Drewry	1 x	1 4 0	1	1	2
Thomas Tripp -	—	—	1	2	4
Samuel Burton -	1½ x	2 16 0	1	2	6
Robert Atkinson -	—	—	1	—	6
John Brown -	—	—	1	1	10
*Peter Wright	—	—	1	1	3
John Drewry -	—	1 8 0	1	1	2
William Lovitte -	7	10 0 0	1	3	12
William Eastwood -	1 x	1 10 0	1	1	4
George Brown -	1½ x	1 15 0	1	1	3
John Grasby -	house & cow kept for	3 0 0	1	1	4

Nothing from the parish

\* An old woman in the family of Peter Wright has as. a week from the parish.

The greater part of the above cottagers have either their houses or cows, or both, altogether or in part as wages.

## ROXBY, LINCOLNSHIRE,

Contains about 268 people; 30 cottagers keep cows, &c. The soil varies from sand to clay. Average rent 16 or 17s. per acre. Much is fit enough for pasture. This parish has joined that of Winterton and Wintringham in the erection of a workhouse; the expence of which is now paid off by instalments, raised by an increased rate—last year 3s. 6d. in the pound.

Names.	Land.	Rent.	cows	pigs	fam.
	Acres.	L. s. d.			
Matthew Stainton .			2	—	2
Tho. Hornsby & son	9	6 2 6	2	—	5
*Tho. Hornsby, jun.			1	2	7
John Jaques .	8	5 6 0	2	—	5
Thomas Goates .	3½	3 7 6	2	1	4
†Geo. Collingwood	house & gar	0 14 0	1	1	5
Wm. White & son .	7	5 0 0	2	1	8
William Frow .	7	5 0 0	2	—	5
William Brumby .	7	4 18 0	2	—	3
Mary Snell .			1	—	4
John Hicks .	9½	7 10 0	2	1	4
John Wells .	7	5 8 0	2	—	4
Thomas Kirman .	8	6 2 0	2	1	4
George Rainsey .			2	—	7
Frances Wells & son	8½	5 0 0	3	—	8
Widow Hill .	9	5 0 0	2	—	3
E. Hardy & son .	8½	7 0 0	2	—	8
‡John Smith .			1	2	4
Richard Stringer .	12	9 14 0	2	2	2
John Burton .	9	5 5 0	2	—	7
Matthew Hare .	8½	5 8 0	2	—	4
John Thomas .	9	5 8 0	2	—	2
W. Chimney & son	7	5 6 0	2	1	7
James Drewry .	7	5 7 0	2	1	2
Widow Stainton .	7	5 7 0	2	1	7
John Williamson .	3½	2 8 0	1	1	9
E. Drinkall .	3½	2 8 0	1	1	3
Robert Stamp .	7½	6 0 0	2	—	3
John Chafer .	7	4 13 0	2	—	5
John Waterlow .			1	—	3

Nothing from the parish.

\* Thomas Hornsby, jun. has his cow kept for 3l. 10s.

† George Collingwood has his cow kept for 3l. 13s. 6d.

‡ John Smith has his cow kept in part of wages.



HAMLET OF NORMANBY, PARISH OF BURTON,  
LINCOLNSHIRE,

Contains about 98 people, all having cows, &c. There are no poor; but being assessed along with Burton, pays 2s. 6d. computed some years back, and out of which the constable's expences are also defrayed. The soil is sandy, more and less inclining to loam; will produce tolerable pasture, but is more profitable in alternate grass and tillage. Cottagers keeping cows, &c. 13.

Names.	Land.	Rent.	cows	pigs	hor.	fam.
	Ac. Rds.	L. s. D.				
Thomas Cousins .	13 3	7 10	2	1	—	5
George Hoyle .	5 1	5 6 6	2	2	—	2
William James .	20 1	10 10	3	2	2	7
William James .	7 3	3 16 0	2	1	—	4
Thomas Roberts .	8 0	4 16 0	2	1	—	5
Thomas Glarvis .	8 1	4 10 0	1	1	—	2
Thomas Shaw .	9 1	2 10 0	2	1	—	3
John Duffield .	8 3	2 20	1	1	—	3
John Diel .	9 0	4 18 0	2	1	—	4
John Lunley .	8 1	4 13 0	2	2	—	2
John Chafer .	13 1	4 19 0	2	1	—	7
William White .	7 0	3 14 0	2	1	—	7
James Smith .	11 1	5 10 0	2	1	—	2

Nothing from the parish

WINTRINGHAM, LINCOLNSHIRE,

May contain near 700 people. Lord Carrington is the chief proprietor; and upon his estate are 15 cottagers who have cows, &c. as follow.

Many more cows used to be kept here upon a common; but that being enclosed about five years ago, many of those who were not so fortunate as to rent under Lord C. were deprived of the means, and obliged to give up the practice, of keeping cows. The soil of Wintringham is various, of uncommon fertility, and tithe free; and it's value is increased by the local situation, having a ready communication with the port of Hull. Average rent 30s. per acre. Last year's poor's rate was 1s, 7½d. in the pound, on a low valuation.

Names.	Land.		Rent.		cows	fam.
	Acres.	Gaits.	L.	s.		
Joseph Waddingham .	4	xx	18	0	2	5
William Cook .	4	xx	17	0	1	3
*B. Pickergill .	4	xx	15	10	—	9
Jarvis Nickson .	4	xx	16	0	2	3
Isaac Holmes .	3	xx	15	10	1	2
William Holmes .	4	xx	16	10	1	2
*William Heaton .	4	xx	18	8	—	7
John Pickergill .	4	xx	16	8	1	3
John Watson .	2	x	7	10	1	2
† John Robinson .	—	—	—	—	1	5
† Joseph Robinson .	—	—	—	—	1	2
† William Robinson .	—	—	—	—	1	2
† William Farrow .	—	—	—	—	1	3
† William Sleight .	—	—	—	—	1	5
‡ Widow Bromley .	4	x	11	11	1	5

Nothing from the parish

\* B. Pickergill and Wm. Heaton in general keep two cows.

† John, Joseph, and William Robinson, William Farrow, and William Sleight agist their cows, or have them kept in part of wages.

‡ Widow Bromley lives in a parish house.

All keep one, and some two pigs.

Almost all the above cottagers have large and excellent gardens and orchards, the produce of which is carried to Hull market, &c.

At Wintringham Lord Carrington's tenants have formed themselves into a club, and contribute weekly to a fund, out of which cottagers whose cows have died by accident are assisted in procuring others. His Lordship gave some money to begin with; and continues the holder of several shares, to encourage the institution.

APPLEBY, LINCOLNSHIRE,

May contain about 389 people; 41 cottagers keep cows, &c. Average poor's rate, during the two last years, was 1s. 9d. in the pound.

Names.	cows	fam.	Names.	cows	fam.
John Harrison	1	7	Thomas Newham	3	4
Samuel Andrew	2	3	John Backhouse	2	4
William Howell	1	4	William Needham	2	5
Joseph Marshall	2	4	Francis Emerson	2	5
Widow Dent	2	2	John Smith	1	3
Joseph Allison	2	5	William Green	2	8
William Dunwell	2	4	Susannah Smith	2	4
Thomas Simpson	1	5	John Philipson	2	3
William Backhouse	1	2	Thomas Addison	2	6
George Shepherd	1	4	John Brown	2	3
Joseph Fidel	2	9	George Cavill	2	2
John Keightley	2	6	George Metcalf	2	4
William Jackling	2	6	George Bowskins	2	5
Thomas Carr	2	4	Abraham Hill	1	5
Jos. Marshall, sen.	2	2	Thomas Toft	2	3
Thomas England	2	7	John Thomson	1	7
Anth. Blackburn	2	4	Mary Naylor	1	1
William Hookham	2	4	William Stainton	2	3
Thomas Stothard	2	3	John Taylor	2	5
William Sleight	1	7	John Cross	2	4
Anthony Cowling	2	2			

All have either one or two pigs; none have parish assistance, as attested by the overseer.

In this parish a pasture, and meadow for hay, are allotted for the use of the cottagers: in the first, two acres and a half, at 10s. per acre, are allowed for each cow; in the second, one acre and half, at 15s. per acre. Besides this, each cottage has attached to it from one to three roods, for growing potatoes, &c.: 20 to 25s. rent.

SWALLOW, LINCOLNSHIRE,

Contains about 94 people; 14 cottagers keep cows, &c. Last year's poor's rate was 4d. in the pound.

Names.	cows	fam.	Nothing from the parish
Alice Smith - - -	1	5	
John Laurence - - -	1	6	
Joseph Wilkin - - -	1	4	
Thomas Lusbey - - -	2	4	
Thomas Thomason - - -	2	2	
George Girdum - - -	2	2	
Richard Stamp - - -	1	4	
Richard Robertson - - -	1	4	
William Pickworth - - -	2	3	
John Burley - - -	1	5	
Richard Lusbey - - -	1	3	
William Swaby - - -	1	2	
John Dickson - - -	1	7	
Edward Thomason - - -	2	7	

All keep one pig, and most of them two.

RIBY, NEAR CAISTOR, LINCOLNSHIRE.

This parish contains 28 families, and about 144 persons; 17 cottagers keep cows, &c. The poor rates, upon an old rental, amounted last year to 67l. 9s. 4d. which is more than any preceding year, owing principally to the dearness of corn, &c.

Names.	cows	pigs	fam.	
Robert Ward .	1	1	3	} Nothing from the parish.
Edward Tomson .	2	2	6	
George Walker .	2	2	5	
George Brocklesby .	3	2	2	
Edward Hotchin .	2	2	2	
Edward Beck .	4	2	6	
Ralph Chapman .	1	1	8	
Thomas Shucksmith .	1	1	4	
Thomas Catley .	2	2	4	
Elizabeth Borringham .	1	0	1	
William Horngarth .	1	1	5	
John Blanchard .	1	1	4	
John Raspin .	1	1	2	
George Smith .	0	1	2	
Stephen Winley .	0	1	3	
John Portus .	0	1	4	
John Burton .	0	1	7	

There are ten families in the poorhouse, &c. relieved from the parish; some weekly, and some occasionally.

## IRBY UPON HUMBER, LINCOLNSHIRE.

This parish contains 40 families, and about 170 persons. The poor rates, upon an old rental, amounted last year to 46l. 9s. 3d.; almost double the amount of the preceding year, owing principally to the dearness of corn, &c.

Names.	cows	pigs	fam.	
John Tutty - - -	2	1	3	Nothing from the parish
William Gillyatt - -	2	1	5	
William Trought - -	1	1	5	
William Bocock - -	2	1	3	
William Overton - -	2	1	4	
Andrew Lader - - -	2	1	2	
Christopher Tuplin -	2	1	4	
John Wright - - -	1	1	6	
William Lingard - -	1	1	7	
John Borman - - -	1	1	7	
William Tuplin - - -	1	1	5	
Edward Gillyatt - -	1	1	2	
William Plasket - -	2	1	6	
Edward Kendall - -	2	1	5	
Edward Marris - - -	2	1	6	
John Plasket - - -	2	1	8	
Ephraim Dixon - - -	2	2	5	
John Turner - - -	1	1	5	
John Campbell - - -	1	1	6	
Peter Taylor - - -	1	1	4	

There are eleven families in common houses who pay no rent, nine of which have relief from the parish; some weekly, some occasionally.

## HUMBERSTONE, LINCOLNSHIRE,

Contains 198 people; 12 cottagers keep cows, &c. for whose convenience there is set apart pasture and meadow ground. The soil is chiefly strong clay, much in tillage, some dry and fit enough for cow pasture; rent 16 or 17s. per acre. Last year the poor's rate and all other rates together were 10½d. in the pound. Lord Carrington the sole proprietor, who has been equally attentive to the poor here as at Winttingham.

Names.	Land.	Rent.	cows	pigs	shp.	fam.
	Acres.	L. s. d.				
William Andrew	4½ x	5 14 6	1	1	2	2
Joseph Richardson	5 xx	7 4 6	1	1	6	3
Moses Anderson	3 x	4 0 0	1	2	0	4
Thomas Davy	3 x	3 3 6	1	2	2	5
Benj. Richardson	4½ xx	7 6 6	1	2	6	3
David Lidget	3 xx	4 10 0	1	0	4	4
Gabriel Benton	2½ x	1 3 0	1	1	0	8
Widow Goodburn	3½ x	3 13 0	1	1	0	2
Solomon Lidget	4 xx	5 0 0	1	0	3	4
Thomas Smith	3½ x	5 2 0	1	2	1	7
Henry Good	4½ x	5 0 0	1	0	4	3
Widow Mumby	2 x	3 3 0	1	0	3	1

Nothing from the parish.

Each cottager has a convenient garth, &c.

## ASHBY CUM FENBY, LINCOLNSHIRE.

The population of this parish is about 120 persons ; cottagers who keep cows, 14. Poor rate of late years, on an average, about 1s. 3d. in the pound ; assessed at about three fourths of the rack rent.

Names.	cows	fam.
Francis Kirby - - -	1	2
John Borton - - -	1	3
Joseph Sanderson - - -	2	2
William Renolds - - -	2	8
Thomas Plumpton - - -	2	5
James Andrew - - -	2	6
Edmund Dodson - - -	1	4
John Bennett - - -	2	3
John Gunhill - - -	1	4
David Borkitt - - -	1	6
William Brumpton - - -	1	5
William Jacklin - - -	1	2
William Clark - - -	1	4
William Rhodes - - -	1	6

Nothing from the parish.

Each cottager kills one pig.



WOLD NEWTON, LINCOLNSHIRE,

May contain about 108 people; cottagers who have cows, &c. 9. Poor's rate was last year about 9d. in the pound.

Names.	cows	fam.
William Wright	1	7
Thomas Chapman	1	2
Joseph Farrow	1	7
Joshua Bentoft	1	3
William Smith	1	7
George Lingott	1	8
William Brumby	1	5
*John Burril	1	3
†Joseph Oliver	1	7

Nothing from the parish.

\* John Burril is an old man, and has had this winter a quarter of beans from the parish, to enable him to feed his pig.

† Joseph Oliver has from the parish the same as John Burril.

All keep one pig.

# TABLE EXPLANATORY OF THE ECONOMICAL ADVANTAGES ATTENDING THE COTTAGE SYSTEM.

The table begins with Burley, because till that occurs the particulars were not full enough for the table. It is to be observed that this table does not agree minutely with the notes of the number of cottagers keeping cows, as in some cases there are blanks in the parish tables from cottagers being absent, in which cases they appear in the total, though not in the particular detail.

parish.	no. of inhabitants	no. of cottagers with cows.	no. of souls in their fam. stated.	no. of whose land, &c. stated.	ac. rds.	land occu- pied, gaits	no. of cow gaits	rent.	ave- rage rent in the parish.	calc. from this, and stat. each cow gait at 11.	surplus rent.	defi- cient.	live stock.	poor rate in the pound.	expende of the poor.	parish assistance to cottagers with cows.	L. s.
RUTLAND.																	
1 Burley -	153	12	44	12	136 0	4: 3	21	181 0	16 0	108 16	72 4	—	—	—	—	none	—
2 Egleton -	123	16	60	16	4: 3	21	98 13	21 0	65 17	32 16	—	—	—	—	—	3s. per wk. is	7 16
3 Hambleton	330	28	131	27	226 2	21	256 6	21 0	237 16	18 10	—	—	—	—	—	none	—
4 Empingham	740	22	114	19	259 2	49	262 15	14 0	239 13	32 2	—	—	—	—	—	—	—
5 Lyddesay -	90	8	32	7	42 2	—	35 1	39 0	40 7	—	—	—	—	—	—	—	—
6 Braunston -	370	11	45	9	79 1	—	72 13	11 0	43 11	29 2	—	—	—	—	—	—	—
7 Langham -	450	25	108	23	106 1	45	192 5	20 0	151 5	41 0	—	—	—	—	—	—	—
8 Greetham -	400	17	95	16	139 2	24	154 13	12 6	111 3	43 10	—	—	—	—	—	—	—
LINCOLNSH.																	
9 Colsterworth	630	13	61	13	110 3	24	95 16	5 0	51 13	44 3	—	—	—	—	—	—	—
10 S. Hykham	83	6	23	5	39 0	15	28 15	12 0	38 8	—	—	—	—	—	—	—	—
11 Aubourn -	154	10	46	23	35 2	7	35 16	14 0	54 17	3 19	—	—	—	—	—	—	—
12 Fiskerton -	260	16	59	12	89 0	—	75 8	15 0	64 13	5 13	—	—	—	—	—	—	—

per ann. - 2 12  
4 pks. pot. 4s.  
4 coals a fam.  
2s. 6d. a wk.  
is per ann.

13 Willingham	80	5	26	2	4	—	6	5	15	3	3	5	—	5	—	—	—	—	—	19	8	none
14 Reepham	180	9	50	6	48	—	62	13	20	49	13	13	—	21	9	28	7	0	30	12	none	
15 Fillingham	200	19	83	14	88	15	95	10	15	66	29	10	—	32	61	2	0	11	82	15	none	
16 Gleaston	150	15	47	15	109	1	108	6	10	57	7	50	19	32	17	46	2	0	13	12	25. per wk. is per ann. - 5 4	
17 Ingham	220	21	96	6	24	3	36	0	12	17	8	18	12	26	17	23	1	1	55	2	none	
18 Hemswell	242	24	95	18	70	2	107	0	11	55	1	51	19	30	19	11	1	0	54	0	none	
19 Graytham	92	12	48	12	20	17	40	16	15	18	10	22	6	20	9	—	2	0	3	0	none	
20 Spridlington	120	6	25	5	61	0	47	5	9	0	27	9	16	9	4	19	2	1	57	10	none	
21 Saxby	60	7	33	—	—	—	—	—	—	—	—	—	—	12	5	27	—	1	—	—	none	
22 Oumby	140	10	52	8	71	2	60	2	9	6	33	19	—	15	11	51	1	1	—	—	none	
23 Normanby	220	15	81	—	—	—	—	—	—	—	—	—	—	17	22	4	—	4	0	0	none	
24 Bigby	158	18	94	14	91	1	93	8	13	6	61	11	—	0	26	3	0	0	88	0	none	
25 Ranethby	216	18	81	15	29	0	51	9	10	4	30	10	—	0	31	26	3	0	10	7	none	
26 Limer	236	22	111	—	—	—	—	—	—	—	—	—	—	20	18	4	1	1	—	—	none	
27 Keelby	288	7	30	—	—	—	—	—	—	—	—	—	—	22	20	0	0	2	—	—	one man corn and coals - 16 5	
28 Kemington	200	16	70	9	20	0	27	15	10	0	16	0	—	7	10	0	0	2	58	0	none	
29 Croxton	78	9	51	5	6	2	9	9	10	9	5	0	—	16	15	15	0	0	17	18	one house - 1 10	
30 Melton Ross	104	16	77	9	16	2	24	10	10	0	16	5	—	9	13	12	0	0	30	0	25. 6d. per wk. 6 10	
31 Roxby	268	30	144	23	173	0	122	18	16	6	142	14	—	0	17	0	0	0	139	11	none	
32 W. of Norman.	98	13	53	13	130	0	61	16	13	0	84	10	—	0	25	16	0	0	249	6	59. per wk. is per an. 13l. 10s. 14 10	
33 Wintingham	700	15	58	—	—	—	—	—	—	—	—	—	—	15	—	—	—	1	—	—	house 11. 10s. 14 10	
34 Appleby	389	41	181	—	—	—	—	—	—	—	—	—	—	73	—	—	—	1	120	0	none	
35 Swallow	94	14	58	—	—	—	—	—	—	—	—	—	—	19	—	—	—	6	19	14	none	
36 Riby	144	17	68	—	—	—	—	—	—	—	—	—	—	22	22	—	—	—	67	9	none	
37 Ilby	170	20	98	—	—	—	—	—	—	—	—	—	—	31	21	—	—	—	46	9	none	
38 Humberstone	198	12	46	12	43	2	57	0	16	6	51	17	—	12	12	31	—	0	92	17	none	
Car. forward	8826	5952	674	353	2281	281	1500	3	397	0	1914	2	641	1035	9	951	1441	182	54	1526	4	71 5

Q 9 2

*Table explanatory of the economical Advantages attending the Collage System, continued.*

[illegible]

*Result and Proof in Favour of the Cottage System.*

From the table it appears, that one cottager with another occupies 6.46 acres, 0.79 cow gáits.

That each cottager has 1.55 cow, 0.84 pig, 1.83 sheep, 0.16 horse; supposed equal to 2 cows, 2 pigs; then 3.23 acres, 0.39 cow gait are sufficient for the keep of one cow and one pig. £. s.

That each cottager pays rent for the above occupation	-	-	-	-	-	7	1
That the value of it is	-	-	-	-	-	5	8
							<hr/>
Remains rent for the house	-					1	13
							<hr/>

Or, that the whole rent of the occupations of 353 cottagers is	-	-	-	-	-	2500	3
That the value of the land is	-	-	-	-	-	1914	2
							<hr/>
Remains rent for the houses	-					586	1
Or, for each house	-	-	-	-	-	1	13
							<hr/>

In those parishes where cottagers have cows, poor's rates average 1s. 5½d. In those where few or no cottagers have cows, 5s. 11d.

In the former, the expence of maintaining the poor, averaged by the number of people, is, to each individual 6s. 9d. In the latter it is 13s. 9d.

The difference both of rate and expence, here observed, is very remarkable. To remove any doubts which may be entertained, whether the prevalence of the cottage system is the grand cause, it is necessary only to glance at the following table. In proportion as the number of cottagers decreases, the rate and expence increase.

parishes.	no. of people.	no. of cottages.	proportion to population.	poor's rate.		poor expenses.	AVERAGES.						
				s.	d.		f.	proportion of cottages.	poor's rate.	poor's expenses.	inhabitants in par.	individual expense.	
Hamlet of Normanby	98	—	—	0	0	0	*	s. d. f.	s. d.	s. d. f.			
Glentworth	150	47	3.19	0	2	1	9	2.47	0 32 7	15	1		
Grayingham	92	48	1.91	0	3	0							
Burley	153	44	3.47	0	4	0							
Aubourn	154	46	3.34	0	4	0						15	0
Swallow	94	58	1.62	0	4	0						19	14
Willingham	80	26	3.07	0	4	2						19	8
Kerminton	200	70	2.85	0	4	3						17	18
Lyndon	90	32	2.81	0	5	2						20	0
Bigby	158	94	1.68	0	6	3	12	2.82	0 9 18	45	16		
Croxton	78	51	1.52	0	7	2						11	0
Egleton	123	60	2.05	0	8	0						—	
Reepham	180	50	3.60	0	8	0						30	12
Hambleton	330	131	2.51	0	9	0						—	
Wold Newton	108	49	2.20	0	9	0						—	
Melton Ross	102	77	1.32	0	10	1						30	0
Empingham	740	114	6.49	0	10	2						—	
Hemswell	242	95	2.54	0	10	2	10	3.88	1 6 0 4	169	4		
Humberst.	198	46	4.30	0	10	2						92	17
Fillingham	200	83	2.40	0	11	2						82	15
Ingham	220	96	2.29	0	0	0						55	2
Langham	450	108	4.16	0	2	0	10	3.88	1 6 0 4	169	4		
Spridling	120	25	4.80	0	3	0						57	10
Ashby	120	60	2.00	0	3	0						—	
Fiskerton	260	59	4.40	0	6	0						—	
Saxby	60	33	1.81	0	6	0						—	
Oumby	140	52	2.69	0	6	0						—	
Barnetby	216	81	2.66	0	6	0						—	
Wintringham	700	58	12.06	0	7	2						249	6
Appleby	359	131	2.14	0	9	0	10	3.88	1 6 0 4	169	4		
Limber	236	111	2.12	0	0	0						120	0
Hykham	82	23	3.62	0	2	2	7	5.78	4 12 5	132	11		
Keelby	288	30	9.62	0	3	0						53	0
Greetham	400	95	4.21	0	3	0						—	
Roxby	268	144	1.86	0	6	0						139	11
Colsterworth	630	61	10.32	0	0	0						340	0
Normanby	220	81	2.71	0	4	9						83	0
Braunston	370	45	8.22	0	9	0						—	

\* In the columns of 'proportion of cottagers to population,' the author seems rather obscure; for he calls the series 2.47—2.82—3.88, and 5.78 cottagers decreasing, which apparently is an increasing ratio. But it appears by the case of Ashby population 120, cottagers keeping cows, 60, being set down in the ratio 2.0 that it makes half, consequently the larger numbers in the proportions are the ratio in which the cottagers decrease, and the result of the table is very striking indeed.

A. Y.

*Parishes where there are few or no Cottagers keeping Cows.*

No	Parishes.	No. of families.	Expence of the poor.	Poor rate per pound
			£.	s. d.
1	Caldecoats, Rutland - -	65	110	4 6
2	Great Easton, Leicestershire	140	300	5 0
3	Rockingham, Northamptonsh.	50	110	9 4
4	Corby - - - -	148	166	6 8
5	Kettering - - - -	622	2100	14 0
6	Isham - - - -	40	210	3 2
7	Burton Latimer - - -	170	374	6 2
8	Wellingborough - - -	734	2430	8 11
9	Wollaston - - - -	160	465	3 2
10	Bozeat - - - -	147	510	5 3
11	Moulsoe, Bucks - - -	53	265	4 5
12	Broughton - - - -	25	188	2 0
13	Wavendon - - - -	120	527	4 8
	Totals -	2474	7675	77 3
	Averages	190.3	590.38	5 11

$7675 \div 2474 = \text{£} .3 \ 2 \ 0$  Expence of the poor on each  
                   20                   4½ family in the parish,

$153500 \div 11133 = 9 \ 13 \ 9$  Ditto on each individual,  
                   ÷  
                   13  
                   856.38 people in each parish at an average.

I am, Sir, &c.

ROBERT GOURLAY.

## NOTES ON SHEEP.

*South-Downs.*

**MR. BURTON**, of Langley, near Norwich, who is one of the most skilful and experienced farmers in his part of the county, and of great observation, from the extensiveness of his employment as commissioner and steward, was long strongly prejudiced in favour of the Norfolk sheep; but he was at last persuaded to a trial of the South-Downs, to which he has adhered ever since, and is well convinced of their great superiority. His neighbours are following the example.

Mr. Walker, of Harpley, in Norfolk, changed his flock of Norfolk, from the accounts he read in the ANNALS, to South-Downs, and has had every reason to be satisfied with the change; he keeps more than he did of Norfolks, and makes nearly double the produce; sells his refuse ewe lambs and keeps the wethers to fatten. Tods nine, instead of fourteen Norfolks. Clips 330, which gave last year 37 tod 16 lb. and sold at 50s.

Mr. Overman, of Burnham, Norfolk, has a very capital flock of South-Downs, having for several years bought all of Mr. Ellman, of Shoreham; his flock would figure even on the South Downs. He keeps more in number than he did



of Norfolks, always in better order, and to greater profit; in a word, he has not a shadow of doubt of the great superiority of the breed, and is clearly of opinion that they will gradually eat out Norfolks.

Mr. Coke's South-Down flock at Holkham is so generally known to be excellent, that I need only mention them. They are remarkably good, of the largest size, straight, fine-woolled, clean, light offals, and shew much of that *blood* which it has been the fashion amongst celebrated breeders of late years to get into. The race is improved hitherto; but it well deserves the attention of gentlemen who aim at great beauty of form to be careful not to carry it too far in their rams, lest it brings with it what so many have of late years felt in the case of New Leicesters—tenderness and a want of vigour. It may probably be done in one breed as well as in another. When I urged this to Mr. Overman, he recurred at once to the weight of carcass and wool: but that this is not a full answer, the case of New Leicesters proves, for they now come to a great weight both of carcass and wool; and the Norfolks having very light fleeces and the reputation of hardiness, seem to render the proof double, that these circumstances are not at all inconsistent. I was so unfortunate as to be at Holkham when Mr. Coke was absent, and in a

most ticklish harvest. It was impossible under such circumstances to see accurately one of the greatest farms in the kingdom.

*Welch.*

Mr. Conyers, at Copt Hall, Essex, keeps this breed of sheep in preference to others. He gives 15s. a head for the ewes ; sells the lambs fat at 24s. and fattens the ewes afterwards to from 18 to 20s. ; the fleece  $2\frac{1}{2}$ lb. at 17d. or 3s. 6d. a head. For such a sized sheep, this is a great produce. As to winter food, they get what they can find : no turnips, no hay. Such the account ; it is, however, to be supposed, that in very deep snows better care is taken of them than on the Welch mountains.

---

MEASURES OF THE TEESWATER OX  
SHOWN AT BURY FAIR, OCT. 1801.

**B**READTH of hips, centre to centre, two feet five inches.

Greatest girt, ten feet five inches.

Smallest ditto, nine feet nine inches and a half.

Height behind, five feet five inches.

Centre of hip to the point of the rump, two feet.

Length from nose to point of rump, eleven feet six inches.

Girt of fore leg, nine inches and a quarter.

Guessed to weigh 180 stone (14lb.).

---

## DRAINING.

### *Busb Drains.*

**L**ORD HARDWICKE has drained on a very large scale, and very successfully; on his farm and park of 800 acres, he has drained above 600, and the effect has answered his most sanguine expectations. His main drains in large spaces are of brick, which empty into open cuts made for that purpose. He has worked the mole plough also in many acres, and finds it to answer perfectly well, the drains running after two years as well as at first.

A field now in the park which, when in the occupation of a tenant, often rotted his sheep, is now, by draining, rendered perfectly sound land.

In order to encourage his tenants in the same excellent improvement, his Lordship gave them

at beginning the work materials to fill with; the effect has been that extension of the practice which has given a new face to the estate.

His Lordship has a clause in his leases which has had a very great effect in encouraging his tenants to hollow drain: it is securing to them a repayment of such a proportion of their expence as they may not have reaped a fair return from by doing it towards the end of the term.

‘ And in order to encourage the use of hollow drainage, it is proposed by the Earl of Hardwicke, that at the expiration of the within-mentioned term of fifteen years one person shall be chosen by each party, who are previously to agree upon an umpire—That the said arbitrators shall then proceed to inquire into, and ascertain the amount of the expence which the (tenant) may have been at in the making of any new hollow drains upon the said farm during his or their occupation; and having all documents and vouchers for the expences incurred relating thereto, the said arbitrators are to deduct so many fifteenths from the original cost for as many years as the said (tenant) shall be declared to have enjoyed the use of; and the surplus amount (if any) the said Earl of Hardwicke hereby covenants to pay to the said (tenants) their executors or administrators. And it is further declared and agreed,

‘ that the said arbitrators shall survey the estate  
 ‘ hereby demised, and examine into all the co-  
 ‘ venants to be performed on the part of the said  
 ‘ (tenant) as is expressed in the within-written  
 ‘ indenture; and they are directed to estimate  
 ‘ the amount of the loss or damage (if any) that  
 ‘ may have happened in consequence of any ne-  
 ‘ glect thereof; which the said Earl of Hard-  
 ‘ wicke, his heirs and assigns, shall recover  
 ‘ against the (tenants) their heirs, executors,  
 ‘ and administrators.’

Sir Henry Mildmay, at Dogmersfield, in Hants, has made great exertions in draining some hundred acres, both with hollow drains and open cuts, the latter he finds necessary; and after having, as he imagined, finished some pieces without open drains, he found it necessary to do part of the work over again, in order that the most material main drains might remain open. If these are left sloped, he has found that cattle, in passing, tread and poach, and impede the water, which then hangs and becomes prejudicial; but by cutting them perpendicularly, and making bridges with arches at certain distances, they never attempt to cross at any other places.

## SUFFOLK HOGS,

**T**RIED by Mr. Seaton, of Sussex, and found far inferior to the larger spotted breed which he had from near Woburn, established there by the Duke of Bedford; these come in the same time to double the size, are hardier, and breed better. The Earl of Egremont also tried both, and his Lordship's report is to the same effect; but he has saved from such good breeders that he has litters of ten, twelve, or thirteen, and the sows rear all.

---

## PLANTATIONS FOR SHEEP.

**M**R. WEDGE, at Westley, on Newmarket Heath, finding a small square plantation of fir on his farm, converted it to a very useful purpose by making a pen for his flock all around it, by which means the sheep are well sheltered and warm, in whatever corner the wind may be. It has proved very useful. See Mr. Gwilt's paper on the same subject in the ANNALS.

## PLANTATIONS.

**T**HERE is not a demand for the produce of three hundred acres planted at Toffits, in Norfolk, thirty-two years ago. Mr. Galway sells larch at 1s. 3d. a foot, and Scotch firs at 1s. each; these are now standing after many thinnings at the distance of perhaps eight feet on an average; they occupy each seven square yards; there are consequently about 700 to the acre, and at 1s. each, 35l.; or upon 300 acres, 10,500l.; the mere interest is 500l. a year, instead of which Mr. Galway probably does not receive 200l. a year. This great experiment shows plainly and practically that the calculated value of plantations is ideal, for want of a market at such an age. To be marketable, many more years must elapse, at a very heavy accumulation of capital, in growth, in order to yield scantlings of plank and board that shall have a ready sale in great quantities. It would probably require thirty years more to bring these trees to such a girth. What an immense capital would be invested, even in twenty years, when you begin with 10,000l. Had Mr. Nelson, the original planter, chosen larch, the profit at present would have been five times as great as these firs yield. Mr. Galway has very fine larch, at nine years, of

his own planting, nearly as large as some of the Scotch firs of 32 years.

---

### PRICES OF PROVISIONS, &c.

**T**HE Rev. Mr. Littlehales, of Eaton, in Bedfordshire, has been there fifty years; the rise of all prices he has noted is curious.

Wheat about that time was 2s. a bushel.

Barley 8s. a quarter.

Beef and mutton 1 $\frac{3}{4}$ d. per lb.

Butter 4 $\frac{1}{2}$ d. per lb.

Malt 2s. 6d. a bushel.

Labour 6s. a week till within twelve years.

Lynn red port wine 25l. a pipe.

Coals 20s. a chaldron, and freight.

Deals 5l. a hundred.

Bricks 15s. per thousand, and tiles 18s.; six score to the hundred.

---

### PRICE OF LABOUR.

MR. EDITOR,

**I**T is objected to raising the price of labour, that if it be once raised on account of the high price of provisions, that it would never fall with low prices.



This would depend on the circumstance provided for by the regulation.

It should be remembered that the observation is either founded on what has hitherto taken place, or on absolute theory. It is very true that the prices of labour which have from various circumstances in certain districts been raised by the competition for workmen and other causes have not sunk afterwards, but this is by no means a case in point which can be brought as an argument against a public regulation. Having arisen from private circumstances, such might not be powerful enough to keep it vibrating with the causes ; or, though raised, it might still be much under a fair recompense relative to the prices of the necessities of life. The case of the American war was, however, against the assertion ; for prices of labour then fell, and occasioned much misery amongst the poor.

If the variations by public regulation were for long periods, some difficulties might occur ; but the price should never be fixed for longer than a quarter of a year. The justices in sessions might have a power of declaring what was the mean price of certain necessities for the last three months, and by that standard regulate the price of labour for the quarter following. This would keep the operation of the law in perpetual

VOL. XXXVII. No. 215. R R

action, it would never be lost sight of; there would be no more pretence that could be used for keeping up the price when it ought to fall, than for sinking it when it ought to rise: and appeals to magistrates in all cases would give an effective power to preserve all parties in obedience to the law. It would be utterly vain to quote against such a system the trite remark, that if you raise labour, you will never be able to sink it; for no experience whatever is to be produced parallel in it's circumstances to such a system.

But I am yet to learn, often as I have heard the above observation, where labour has been risen regularly through the year so high that it ought afterwards to sink. I know no agricultural districts where it has been on any occasion risen too high. In Lincolnshire the *harvest* wages have risen absurdly, but not the regular employment; and the harvest prices have been caused by a great neglect in not building cottages, though immense tracts of marsh, fen, &c. have been brought into cultivation.

Upon this common adage, *if you raise labour, you will never be able to sink it*, I cannot but remark, that it is an instance how very apt we are to adopt general maxims without sufficiently examining the facts upon which they ought to be, but are not founded. Those who produce such

a ready cut and dried assertion, should be able to name the district where the mean price of labour through the year is higher than it ought to be under an average price of the necessaries of life. If they were to do this, they would have the semblance of an argument; without doing it, they have not the shadow of one.

The poor must live; and if the wages of their labour are insufficient for their support, the deficiency must be made good by poor rates. One would have thought that the evils of this system of payment had proved themselves sufficiently to have convinced every person: but now, with this tax very rapidly advancing to an equality with the landlords' rent, and exceeding it in many places; paid by persons who have no profit on the high prices of necessaries, but, on the contrary, burthened almost to their ruin, the evil ought to appear of a magnitude demanding immediate relief. Not a word can be advanced, with any rational foundation, to shew that the farmers should not pay the labourers they employ. This observation applies to agricultural parishes; it is equally just, that in manufacturing ones those who cause the burthen should bear it's weight; a burthen easily borne in any case, were labour well paid, and due attention paid to box clubs, rendered universal by retaining a very small proportion of their daily pay.

R r 2

## DEER.

IN Mr. Vancouver's, Cambridgeshire Report there is an account of an extraordinary distemper, which proved very fatal to the deer in Wimpole Park. Lord Hardwicke since that time added fifty acres of fresh land to the park, and this has banished the malady ; whence it should seem that it arose from a sort of *taint* in the land, for want of change. Quere the same effect amongst sheep?

---

NOTES ON VIEWING MR. WALL'S  
LANDS IN ROMNEY MARSH, 1797.

BY AN ESSEX CORRESPONDENT.

ROMNEY MARSH sheep Mr. Wall thinks were better in general forty years ago than they are now, in point of carcase, shape, and tendency to fatten ; the wool as good now as then, and may possibly be better. The decline has been owing to want of care and attention in breeding. It appears from the experiments of Mr. Wall, that great improvements might be made in this breed, of which a clear proof appeared at Hithe

fair, at Canterbury, &c. and by one sheep killed at Ashford, and sent to St. James's market.

Mr. Wall has been successful particularly in the justness of shape, smallness of bone, fineness of wool, and disposition to fat.

In respect to size, one sheep killed at Hithe weighed more than 40lb. per quarter; that at Canterbury, 45lb. per quarter; and that at London, 35lb. In general, at from two to near three years old they weigh from 22lb. to 36lb. per quarter.

A ram of Mr. Wall's clipped 12lb. of very fine wool.

He made last year more than a thousand guineas by rams.

---

## NOTE ON POTATOES.

May 13. 1788.

**T**wo bulls, eight young cows, and four to be fattened now on potatoes, and the use of them incredible. Hay is much wasted by the oxen, &c. but all ravenous for potatoes, now grown with three or four-inch shoots.

## SERMON TO A COUNTRY CONGREGATION.

PSALM CXLvii. VERSE 14.

*He maketh peace in thy borders, and filleth thee with the finest of wheat.*

OF all the classes of mankind there is not one to whom peace and plenty are of more consequence than to those who occupy and those who labour the earth. It would be useless, upon the present occasion, to enter into details to shew that extreme scarcities are mischievous even to the farmers, who seem to the eye of ignorance alone to receive a profit from those high prices which are injurious to every other person : but such is certainly the fact ; and the well-informed, who know that high prices are occasioned by small products, yet tempt landlords in many cases to an undue rise of rents, as if the contrary were the fact—that the support of the poor falls in country villages entirely on the farmers, who must pay at the same time an increased price for every article they use or consume—to such the fact will be sufficiently clear. As to the labouring poor, not a word can be necessary to

shew how much they suffer by the means of subsistence failing. But a state of war is a state of danger; and an invasion from abroad, or riots and confusion at home, are singularly ruinous to a class of men chained to their local residence, whose property is destroyed, if it is moved, and in every season, if not moved, offers a broad mark for every foreign and domestic foe. My first position I shall therefore consider as self-evident—that to these classes peace and plenty are singularly blessings.

But, my friends, to what do they succeed? to a war which for duration, extent of ruin and desolation, waste of blood and treasure, depth of misery and variety of horrors, has been without example in the annals of mankind: and though the all-pervading providence of God has most wonderfully preserved this happy kingdom from the general destruction, yet have we felt enough to shew that the almighty arm has been stretched forth, and that our preservation has been on many occasions even to common eyes wonderful—to the eye of piety directly, though not visibly miraculous. The winds and waves have wafted our fleets in safety, and destroyed those of our enemies; the poniard of the assassin, levelled at the breast of the best of kings, has been more than once turned aside: that health recovered and pre-

served on which a nation's fate depended : a sort of national bankruptcy converted, marvellous to think of, to wealth and national security ! mutinies, on which were suspended inevitable destruction, raging to a point, but subsiding by the unaccountable infatuation in those who fomented them ! Who can fail to reflect on these events, and, reflecting, see not the hand of God in all ? To raise this eventful period to it's climax of terror, scarcity pervading the land and bringing us to the very verge of famine. Consider what would have been the consequence of another bad crop and a wet harvest, with confusion at home and a dreadful enemy at the gate ! One's blood runs cold at the thought. Blessed, for ever blessed, be that Providence which averted our utter destruction !

But he *giveth peace in thy borders, and filleth thee with the finest of wheat.* Who hath done this ?

Perhaps the great error and deepest offence of the present age are the habit of attributing to second causes the immediate acts and operations of the Deity. A man of any piety hears of *nature*\* till he abhors the ingratitude : the sea-

\* Nature is but a name for an effect  
Whose cause is God—

His presence who made all so fair, perceiv'd,  
Makes all still fairer.

COOPER,



sons, the wind, the rain, the sunshine, the courage of sailors, the conduct of admirals, the wisdom of statesmen, the skill of negotiators, what are all such second causes but means in the hand of HIM who directs and governs the universe? But what is the language we too often hear, and never oftener than in the mouths of farmers, How *lucky* to have such a season, How *fortunate* was such a rain. In like manner their superiors will be eloquent on the intrepidity of a Nelson, and on the boundless talents of a Pitt. The luck of seasons is nonsense; the praise of that genius which saves a nation is wise and grateful, but ever let it be in subservience to the higher glory of the Providence that over rules the whole, and that could have turned the brightest talents into mischief, and pointed every path of glory to destruction.

Let us, my brethren, consider in what manner, with what sentiments we ought to receive and meditate on these most distinguished blessings which are poured down with so bountiful a hand on this most happy among the nations of the earth. It is a subject of infinite importance: if we receive such favours with hearts duly grateful, we may expect a continuance of them; but if we speak of *fortune*, and think not of the giver, we may look for a dreadful

reverse. proportioned to the baseness of such ingratitude.

And here, previously to my attempting to explain what ought to be your conduct, let me in general remark a distinction necessary to be made between what may be called a *moral* and an *evangelical* gratitude: there are many decent, moral characters in the world who believe in God, and may have some indistinct notions of his providence, but who are very far from drawing those notions from the only true and infallible source of divine knowledge—the holy scriptures; on whatever other foundation they build, whether on reason, philosophy, the fitness of things, the beauty of virtue, the dignity of human nature (when they can find it), be assured their speculations are vain, and their gratitude offensive. God has explained the duty of man by his son Jesus Christ, and the first article of it is to believe in him; the duties of man, therefore, are the duties of an evangelical Christian. I address farmers and labourers, amongst whom I trust the vile doctrines of modern days have made but little progress; but you may not feel in their full force and vitality the doctrines of a crucified Saviour: without them all is dreary and barren, the best services wretched, the best feelings of the heart—de-

pravity. The natural man mingles in the paths of every duty, and corrupts even what he seems to adorn\*.

When the ministers of the gospel call on their congregations to be pious with a view to any temporal blessing, such exhortations are to be received, as they ought always to be meant, with the spirit of entire submission to the pleasure of the Almighty. The best of human exertions may not in this way meet their reward; but it is consistent with the whole tenour of scripture to believe that God will in every age shew favour to his church, and that any nation in whom are found the greatest number of sincere worshippers of him in that *spirit and truth* revealed by Jesus Christ will receive, even in temporal benefits, the greatest marks of his favour in security and protection; and, consequently, that every individual who truly seeks the Lord, and obeys his dictates as well as human infirmity will permit, has some effect in bringing down blessings on his country. It is of much importance to have just ideas on this material point; for it ought to have a powerful effect on every man as an instigation, were his own sal-

\* "Works done before the grace of Christ, and the inspiration of his spirit, are not pleasant to God: we doubt not but they have the nature of sin. *Thirteenth article of the Church of England.*"

vation not sufficient, to keep him true to christian principles, and the practice of every duty.

In order, then, to shew our gratitude to God for the singular blessings we have enjoyed, and do most peculiarly enjoy at the present moment, it behoves us in the first place to be warm, active, and alive in all our religious sentiments and duties. To guard with the most unremitting diligence against the loose and idle way of thinking and speaking which seems, by an attention to second causes only, to banish God from his own world. To be impressed with the liveliest conviction of the divine omnipresence, and universal government of all events, which will make you regard HIM in the victory of an admiral, or in the negotiation of an ambassador. This habitual turn of mind, which can hardly spring except from a disposition to piety, will re-act on your hearts, and produce content and resignation under every misfortune, and gratitude for every blessing. You will become disposed to search the scriptures, in which, with unerring truth, he has spoken to you, in order to find the best way of pleasing this GREATEST AND BEST OF FRIENDS; you will become solicitous to hear his word, to attend with reverence his worship; you will be regular in the practice of family and of private prayer, and do all that in you lies to promote religion and piety

amongst your relations, dependants, friends, and neighbours. This will be the best way of showing your gratitude to the Almighty for the great and manifold blessings showered down upon your country. And if you wish for his assistance in peace, as he has protected you in war, be assured that piety and benevolence are the surest means of securing it. You will probably hear or read of political quarrels on the terms obtained in the present negotiation; you will hear of men violent about Malta and Portugal, the Cape and the Indies. Look at home, and let not your own conduct have any tendency to hurt your political interests; for be assured that he who shall steal in privacy (as he thinks) to defile the bed of his neighbour—exert his talents to seduce unsuspecting innocence—plan with sagacity the means of over-reaching in a bargain—defraud, cheat, or pilfer—who shall swear and profane the sacred name of God—who, from singing psalms at church in the morning, shall get drunk at an alehouse in the evening—who in the day is idle, that at night he may industriously poach—who shall rest not on the sabbath, and neglect the public worship—such men must know that their lives tend only to a fearful death and everlasting perdition: but they have not thought, perhaps, that they are throwing obstacles in the way to a secure and lasting peace;

they have not considered such actions as impediments to the Marquis Cornwallis, and that our negotiations with France may suffer by wickedness in a village in England ; and yet the connection is so plain, that you cannot admit the scripture doctrine, that righteousness exalteth a people, without recognizing at once the public evil tendency of every private vice.

And what an animating thought for cheering the bosom of humble piety, that the good man, by his life and prayers, calls down blessings on his country ; that he is a small link in that chain of means by which heaven connects itself with earth. The minister of the gospel who, perhaps, is despised by an unthinking world in proportion to the truth and importance of his vital doctrines, but under every reproach persists in his holy career, and turns some at least to the ways of eternal life, may comfort himself by reflecting on the temporal benefits he confers on those who are little disposed thus to secure themselves. Well and truly has it been observed by a shining light of the present age, " That to the decline of religion and morality our national difficulties must both directly and indirectly be chiefly ascribed ; and that my only solid hopes for the well being of my country depend not so much on her fleets and armies, not so much on the wisdom of her rulers or the

spirit of her people, as on the persuasion that she still contains many who, in a degenerate age, love and obey the gospel of Christ ; on the humble trust that the intercession of these may still be prevalent ; that for the sake of these, Heaven may still look upon us with an eye of favour\*.”

Men cannot upon these principles have any doubts concerning the general obligation of piety and virtue when considered in reference to the political interests of their country ; but the duty has many particular branches which demand some attention at the present eventful moment. Upon these I shall add a few words which may be useful in guarding you against giving unpremeditated offence to the omnipotent protector of our country.

*First*, then, let me call on you not to condemn or find fault with the peace on account of any of the terms of it. This cannot but be of-

\* Wilberforce † on Christianity.

† Perhaps the self-approving, haughty world,  
That, as she sweeps him with her whistling silks,  
Scarce deigns to notice him, or, if she see,  
Deems him a cypher in the works of God,  
Receives advantage from his noiseless hours,  
Of which she little dreams. Perhaps she owes  
Her sunshine and her rain, her blooming spring  
And plenteous harvest, to the prayer he makes  
When, Isaac like, the solitary saint  
Walks forth to meditate at even tide,  
And thinks on her who thinks not for herself.

COOPER.

fensive to God, because it implies that you doubt of his power to protect you in peace as he has defended you in war. Peace itself is one of the greatest blessings which the Almighty gives to man; and to complain of it's establishment because you dislike certain of the conditions, is direct rebellion against Providence. Terms, before the conclusion, are proper objects of human discussion; but when once determined, they are to be received as the will of God, and demand nothing but thanksgiving and gratitude. He who well considers that stupendous stream of prophecy which has foretold, in the most wonderful manner, the greater events of all these latter ages of the world, will be convinced that the whole series was determined in the prescience of the Deity before the foundations were laid. How such predestination is consistent with the free will of man, is one of the greatest mysteries which religion has to offer; but that they are consistent, no rational mind can doubt. This consideration ought to banish all murmuring and discontent at any events *when passed*; because when once they have taken place, they have the full sanction of Providence to convince us that it was not in the divine will to prevent them. But have we not, from the events of the war, the greatest reason to trust the goodness of God with our protection in



peace? We, who have been miraculously preserved from evils which have been so ruinous to other nations; and preserved by means which seemed to threaten our destruction; as if God had said to us, your own policy shall fail, I will defend you by such means that your hard hearts shall not be able to attribute it to any arm but mine. After such a war, shall we quarrel with the terms of peace, as if the same almighty hand became pained at signing a treaty? No: let us turn, with eyes full of gratitude, to Heaven, and trust the counsels of that wisdom with whom our fate rests notwithstanding all our prudence and all our exertions.

*Secondly,* Let us avoid the contrary error, that of supposing we are in a state of safety and independence because free from the dangers of hostile France. Alas! my brethren, we are never safe but in the mercy of God's providence. Were we to become high-minded, and ungrateful to Heaven for peace, how soon might we see it converted to new and more dangerous, to internal hostility and confusion. Some men tell us that the peace will take from us much of our trade and our wealth, others, that it will increase both; perhaps prosperity is most to be deprecated, as most likely to harden our hearts and make us forget the God that

VOL. XXXVII. No. 215. S 8

gives it. It is a melancholy consideration that war and famine, to which something like pestilence has been in some districts added, could not bring the people to repentance for their sins, and return to the regular worship of God: but empty churches shewed the full iniquity of their hearts. If such visitations could not make us think seriously in the fear of God, is it probable that with peace in our borders and filled with the finest of wheat, we shall be more ready to seek the Lord?

*Thirdly*, We read in the papers of men who talk of the universal monarchy of France: I do not wonder at such language from those who speak without scripture; for certainly she closes the war in a situation that leaves nothing to prevent it, as far as human means admit of calculation: but the sure word of prophecy tells us that the Roman is the last of the empires. Whatever may be the final destruction of it under it's ten kings, we know that no new monarchy is to rise on it's ruin.

*Fourthly*, Let me endeavour to impress on the mind of every person in a situation removed from the fear of want, that there is scarcely any duty more urgent, or more necessary upon the return of peace, than that of instructing the children of the poor in the principles of religion and piety. We cannot hope to escape future wars, except

through a more peculiar blessing from the Almighty than we have ever yet merited; and let us contemplate with this view the tremendous power in possession of which France closes the scene of hostility. Is it a power to be resisted by a divided, broken, factious nation? No, my friends, if unanimity do not collect in one focus the hearts and hands of the British empire, we may look for a war, whenever it comes, of disgrace, misery, and ruin. And what is to inspire union, what can inspire it but religious instruction. To look to any other means or motive is to trust to a rope of sand. It is the Legislature alone that can take measures to improve the morals of other classes; but to mend the hearts of the poor, to improve their minds by instilling the blessed doctrines of christianity while young, and so to conquer natural depravity by the grace of God working in their hearts—this great and happy attempt depends, in the country, on farmers and others but just above the poor. O! labour in this most necessary vocation, for whenever troublesome times return you will find such instruction repaying you in a thousand ways; you will find those obedient friends who without it would be, perhaps, the rancorous children of *the rights of man*. The blessing of God will be sure to attend such endeavours, and you will have the satisfaction of

being surrounded by peaceable, honest, humble, and pious Christians for your poor neighbours, instead of those worthless, profligate, swearing thieves and plunderers you have so often complained of.

But in order for such instructions to have their full efficacy, it will be necessary that the higher classes of villages should be careful to set a good example to their dependants and inferiors; for it will be in vain that you teach the poor to do that which you neglect or despise yourselves. If divine service is avoided by the farmers, the labourers are not likely to attend it: If their betters are drunkards and fornicators it will be in vain to preach sobriety and chastity to the poor. If gentlemen swear, and profane the name of God, do you think that their inferiors will be guarded in their converse?

I have not spoken of the enormous power of France with the least other apprehension than as a threatening means of punishing our future forgetfulness of God. With piety pervading our land, I have not the smallest alarm at it. Scripture is full of information on the vanity and folly of any nation trusting to such power as that possessed by the great conqueror of France. The Assyrian was as great in his day as Bonaparte; and what said the Lord Jehovah to him in that remarkable passage of Isaiah, which de-

neates, so exactly, the dealings of Providence with the great ones of the earth, making them the means of punishment? O! Assyrian, the rod of mine anger, and the staff in their hand is mine indignation; I will send him against an hypocritical nation, and against the people of my wrath, will I give him a charge, to take the spoil and to take the prey, and to tread them down like the mire of the streets. — HOWBEIT, HE MEANETH NOT so, neither doth his heart think so, but it is in his heart to destroy, and cut off nations not a few; for he saith, are not my princes altogether kings? — Wherefore it shall come to pass, that when the Lord hath performed his whole work upon Mount Sion, and on Jerusalem, I will punish the fruit of the stout heart of the king of Assyria, and the glory of his high looks; For he saith, by the strength of my hand I have done it, and by my wisdom, for I am prudent; and I have removed the bounds of the people, and have robbed their treasures, and I have put down the inhabitants like a valiant man. — Shall the axe boast itself against him that heweth therewith?" And his destruction is foretold. Such conquerors are here described in terms applicable to every age. They are evidently the means of punishment in the hand of

God, who permits them to go on to a certain point, and then limits or destroys them. Bonaparte may be the Assyrian to our sins as well as to those of France and other nations; but it is sin alone that gives him power, and points every exertion of his hosts. Let us tremble, not at France, but for our own offences, for it is they alone that can move the *rod of anger* and the *staff of indignation*.

Worldly-minded men are apt, if they have warm fancies and useful pursuits, to bury themselves so much in the contemplation of national improvements, and wealth and greatness, as not easily to disengage themselves from contemplations of that great future advance in agriculture, manufactures, commerce, public establishments, roads, harbours, buildings, and I know not what fine speculations, as to throw not a thought upon the dissolution of all things, or to be able to give a moment's attention to any thing but a perpetual increase. How often have we heard the exclamation, "Keep but the French out of these islands, and what will they not come to?" And if any one speak of religion, or the satisfaction which the Deity reaps from all this, it is too probably answered with a dangerous confidence, or a smile bordering on contempt. Yet, surely, we ought to inquire whether our great Creator and Preserver can look down without indignation on a

people alive and animated in every pursuit, unceasingly anxious in every effort, yet doing little for his glory, nor with any motive of piety and adoration to the stupendous Cause of all things. It is the grateful heart of man that Boundless Goodness loves to contemplate; and what must be the effect on the Omniscient Mind to see a people forgetful of the Author of all their blessings, and growing infidels in proportion as they prosper? Look around, and what do you behold but mingled vice and wealth; profligacy and greatness; infidelity and success; the riot of luxury and the misery of poverty; God forgotten; Christ denied; and the men who would be thought Christians, nominal in religion and real in the world? What is all this but a base ingratitude? And what motives can we conceive from any view we can take of the world, that should induce a continuance of such an order of things; of such a race of animals endowed with reason, and never using it to the glory of it's Author? I cannot view the perpetual wars abroad and the impiety at home without surprise that the whole human race has not long since been swept from a globe they inhabit only to disgrace.

Be assured, my brethren, it is piety, and the many well-rooted virtues springing from it, that alone can call down a continuance of God's

blessings on yourselves, your children, and your posterity. Your admirals, your generals, your statesmen, and all your commerce, wealth, and greatness, without this far-better security, will, by inspiring vain hope and a proud, self-sufficient confidence, but tend to your surer decline and eventual destruction. *Woe* unto them that stay  
 ' on horses and trust in chariots because they  
 ' are many, and in horsemen because they are  
 ' strong; but they look not unto the Holy One  
 ' of Israel, neither seek the Lord.\*  
 ' Who hath taken counsel against Tyre, the  
 ' crowning city, whose merchants are princes,  
 ' whose traffickers are the honourable of the  
 ' earth? The Lord of Hosts hath purposed it  
 ' to stain the pride of all glory, and to bring into  
 ' contempt all the honourable of the earth.†  
 The study of the word of God will give a right  
 turn to your minds upon all these great and mo-  
 mentous questions, and will found your political  
 knowledge upon the same rock on which your  
 salvation is erected. Be not ready to imagine  
 that religion is a business only of church wor-  
 ship, and an employment for Sunday: it is the  
 great business of existence and life; it must per-  
 vade all the feelings of your hearts, and give it's  
 colour to all the ideas of your minds. He who  
 ' clothes himself with Christ' will have Chris-

\* Isaiah, chap. xxxi. v. 1. † Isaiah, chap. xxiii. v. 8.



tian views of every object ; and were the great mass of the nation thus in a state of grace, of what consequence would be an hundred adverse conquerors, or millions in array against us ? Then might we say, ' the Lord of Hosts is with us, the God of Jacob is our refuge.' 112

Let us then, with singleness of heart and purity of mind, address ourselves fervently in spirit and in truth to the great and almighty Director of all events, trusting with confidence in his eternal promise that he will listen to the prayer of the righteous with unwavering faith in the atonement and mediation of his son Jesus Christ, who hath assured us that when we come together in his name he will be in the midst of us. A lively and active faith, manifest in the good works which I have described, will carry your prayers and praises to the throne of mercy, will give peace to your paths and plenty in your fields; will animate every satisfaction while you live; and smoothing the bed of death, will point your well-founded hopes to everlasting joys hereafter in the mansions of the blessed, which that we may all attain &c.

ON THE MEANS OF PROMOTING THE  
SPIRIT OF IMPROVEMENT IN A  
COUNTRY.

BY SIR JOHN SINCLAIR, BART. M. P.

SIR, *Charlotte Square, Edinburgh, Nov. 9, 1801.*

I HAVE ever wished that the improvements of this country should be carried on, not on a trifling, but on a great scale; and I have no doubt, however problematical it may appear, that it is much easier to carry on a general and extensive system of improvement, than one of a partial and insignificant nature. With only a trifling object in view, there is no real anxiety or exertion; the business is conducted with languor, and must necessarily terminate either in total disappointment or in a manner but little likely to give much satisfaction; whereas, when a number of important objects are in contemplation, all the powers of the mind are roused. Success in one attempt tends to promote success in another; an emulation is excited among all ranks and descriptions of persons, and the whole is carried on with a degree of energy which cannot fail to be successful.

It is on these principles alone that the great perfection to which every art and science was

brought in the republics of Greece, *at one and the same period*, can best be accounted for.

Impressed with these ideas, I was led to try, by way of experiment, in how many various respects the improvement of the most remote district in the kingdom (the county of Caithness) could be promoted in the course of one summer. I subjoin the particulars, which I should be glad to have recorded in your valuable collection, the 'ANNALS OF AGRICULTURE,' together with a paper explaining the means of exciting a general spirit of exertion in a country by means of reports stating the progress annually made in carrying on it's improvement.

Sincerely wishing that the attention of the public will *now* be more directed than hitherto has been the case to our favourite pursuit—the internal interests of the country,

I remain, with great regard,

Your faithful and obedient servant,

JOHN SINCLAIR.

N. B. You will hear with pleasure, that the Dublin Society are carrying on the Statistical and Agricultural Survey of Ireland with great spirit. I received the other day the first and second volumes of surveys already printed, containing the accounts of King's County and of

Queen's County, drawn up by Sir Charles Coote, Baronet, after the model of Mr. Billingsley's excellent Report of Somerset; and General Vallancey informs me, that the survey of 25, out of 32 counties in Ireland has been already undertaken, so that the work will soon be completed.

*To the EDITOR of the ANNALS OF AGRICULTURE.*

SIR, I HAVE often thought that it would tend much to promote the most important interests of the country, if persons were appointed annually to draw up statistical or agricultural reports of the improvements either actually carrying on or likely to be executed in each county, and were such reports both printed in the newspapers and other periodical works, and laid before Parliament, the publication of such statements might not only have the effect of rousing a spirit of emulation in the different districts, from which the happiest consequences might be expected, but thus one part of the country might obtain very important suggestions from another with which it has no immediate means of intercourse: for instance, the mode of husbandry practised in the ten counties of England, as Lincolnshire, Cambridgeshire, and Huntingdonshire, has been introduced into

Caithness this year, and is evidently more likely to answer in a highland district than any other. If that system succeed here, which there is every reason to believe will be the case, what an advantage would it not be, to have the knowledge of that circumstance circulated at once over all the Highlands? In the same manner, it is of the utmost consequence to have it universally made known, that the Cheviot breed of sheep will succeed fully as well in the North, if not better, than the common black-faced. There are already several thousands of that breed in Caithness and Strathnaver, thriving as well as upon the borders of England and Scotland; so that the point cannot be disputed. The difference to the landlord and the public is very great; for the Cheviot breed, when once fairly established, can afford to pay double the rent of the black-faced. Highland and other proprietors, therefore, ought to attend to that circumstance when they have sheep farms to let, and should encourage farmers from the Borders to take them. The success, also, that has attended the introduction of the red oat into the North, which is an earlier grain than the white, the grey, or the black oat, which is much less apt to shake, much more equal in point of quality or sample (having in general but one pickle), and much more productive in regard to meal,

ought to be as generally known as possible. But the great object of the proposed statistical reports is, that the Government and the Legislature of the country should know what improvements are going forward, and what public encouragements are necessary to promote them. Any government that would set out on the principle of promoting public improvements, would necessarily be entitled to the confidence of the country ; and there is no way in which a legislature can spend it's time, or expend a portion of the public money, with more satisfaction, or to more advantage, than by encouraging such a spirit. Without dwelling, however, on these points farther at present, I shall now proceed to give a short sketch of the various improvements which have been carrying on, in the course of the year, in this remote corner, which I hope will sufficiently explain the nature of the measure above suggested. And hoping that similar accounts will be drawn up of the exertions made in other counties, which it will give me much pleasure to peruse,

I remain, Sir, your very obedient servant,

*A Friend to Public Improvement,*

*Thurso, Sept. 7 1801.*

*A Note of various Measures, calculated for the Improvement of the County of Caithness, carrying on, Anno 1801.*

1. Mr. HEADRICK, and Mr. Bushby, the Mineralogical Surveyor, have been sent north, by the Barons of Exchequer in Scotland, to bore for coal at *Scrahster*, in the neighbourhood of *Tburso*, on lands belonging to the Crown, where there is a great probability that a very valuable mine of coal will be discovered.

2. Mr. Telford, a respectable and intelligent engineer, has received orders from the Treasury to survey the harbours on the coast of *Caithness*, in particular those of *Wick*, *Tburso*, and *Dunbeath*, and to estimate the expence of making the same. Some public assistance may be expected for carrying on these important undertakings; in the promotion of which the Directors of the British Fishing Society, and Mr. Vansittart, Secretary to the Treasury, have much interested themselves.

3. For the purpose of improving the fisheries on the coast of *Caithness*, Government has sent north, free from expence, some *Dutch* fishermen, to be employed in the herring fishing at *Wick*.

4. Mr. Charles Abercrombie, so celebrated

for his skill in lining out roads, has received orders from Lieutenant General Wyse, authorised for that purpose by Lord Pelham, Secretary of State for the Home Department, to line out the roads about the *Ord* and hills of *Berridale*, and along the borders of *Caithness* and *Sutherland*, so as finally to settle the direction throughout a tract of country which is reckoned the most difficult to make of any in *Scotland*.

5. Application is made to Government for authority to lay out a sum of money this year in making the roads of the county, to be repaid out of the balance of the forfeited estates in *Scotland*; with a view not only of carrying on so essential an improvement, but also of furnishing a number of industrious labourers with the means of subsistence.

6. A person from *Pertb*, well acquainted with the linen trade, has examined in the course of this year the advantages which *Caithness* possesses for carrying on that manufacture; and has placed them in so striking a point of view, that no doubt is now entertained of its being soon established on a large scale in the county. Some flax is already raised, and great quantities of yarn spun, wove, and bleached to as great perfection as in any part of *Scotland*.

7. When the harbour of *Dunbeath* is made, it is proposed to carry on a regular intercourse with



the opposite coast of *Moray* and *Banff*, for the purpose of importing lime from *Portsoy*, &c. and for exporting cattle too large for sending round by the heads of the *Fritbs*, or in too good condition to be driven to any great distance through a rugged country.

8. A number of farmers from the *Lotbians* and other southern counties have been examining the farms in *Caitbness*, where it is supposed that several of them will settle. They have every inducement to do so, as the crops in *Caitbness* were abundant for the two last years, when they failed in so many other districts.

9. Robert German, from the county of *Cambridge*, has come to *Caitbness*, with the peculiar sort of ploughs adapted for trying the fen husbandry, as practised in *Lincolnsbire*, *Cambridgesbire*, &c. This is the most profitable of all farming; producing, at a small expence, great crops of grain, grass, rape, tares, turnips, &c. by paring and burning mossy lands, not worth, in their present state, a shilling per acre. There is every reason to hope that this important improvement will answer equal to the most sanguine expectations of those by whom it has been introduced.

10. Mr. Stephens, junior, proposes being in *Caitbness* in October, to examine to what extent

VOL. XXXVII. No. 215. T t

watering of land and draining can be carried on in the county; that such essential improvements may be pursued, with proper spirit, in the course of next season.

11. The resolutions adopted by the gentlemen of the county last year for establishing winter herding, preventing the casting of seal and divot, and including other branches of police, have already had so beneficial an effect, that it is resolved to enforce them as much as possible. Indeed, all the intelligent farmers in the county are so sensible of the advantages resulting from them, that it is hoped no compulsory measures are necessary to ensure their observance.

12. Mr. Scott, a respectable builder, from *Edinburgb*, is employed in erecting houses in the new town of *Tburso*. He has discovered a very valuable freestone quarry in the neighbourhood, which will be of the utmost service in promoting the building of that town; and it may become an article of export to *London* and other places, being of an uncommon good quality. The town of *Tburso* now contains about 2000 inhabitants, and has increased about 400 within the last ten years.

13. The trees which have been planted in the hilly parts of the county promising to answer, it is proposed to carry on plantations there on an extensive scale, and to establish nurserymen,

by whom the gentlemen of *Caitbness* may be supplied with young trees accustomed to the soil and climate, and consequently more likely to thrive than any that can be imported.

14. Some promising veins of copper, and of lead ore, and specimens of the most beautiful marble, having been discovered in different parts of *Caitbness*, Mr. Hutchinson, of *Alstonmoor*, in *Cumberland*, came north to examine them; and is so much pleased with their appearance, that he intends, in conjunction with his friends, to establish a company for working such as are likely to be the most productive and valuable.

15. The introduction of the *Cbeviot* breed of sheep has succeeded so completely, that it is proposed to increase them considerably. The flock of one proprietor already amounts to between 3 and 4000; and he proposes augmenting the number to 10,000, which will probably be the largest flock of so valuable a sort in the island. Materials will thus be furnished for the establishment of a woollen manufacture, which has been long much wished for.

16. Though sheep must be the staple article in the hilly districts, yet cattle ought to be principally attended to in the plain country, until there is a market for considerable numbers of fat sheep. The cattle of *Caitbness* are much improving in quality, particularly those which

T t 2

have been crossed with the *Galloway* breed. In order to accommodate the drovers who may wish to purchase them, and that the cattle may be brought to their proper value, it is proposed to hold stated fairs in the beginning of the months of June, August, and September, which several considerable dealers have engaged to attend.

17. A regular and frequent communication with other places is essential to the improvement of any district. To obtain that advantage for *Caitbness*, it is necessary that a daily post should be established to the two principal towns; and it is to be hoped, that an intended application to the Postmaster General for that purpose will be successful. It is farther proposed to have packets or vessels that will sail at fixed periods from *Leith* to the towns of *Wick* and *Tburso*; and also to carry on an intercourse with the metropolis, by means of the fishing smacks which supply the *London* markets with cod and other fish, and which rendezvous for several months in the year at *Scrabster Road*, near *Tburso*.

18. Instead of applying either to courts of law or to Parliament for authority to divide the commons, it is not unusual at present to defer the same to the decision of one or more gentlemen of the county who are not interested in the division; and so much are the proprietors in

general disposed to promote such measures, that a favourite toast here is likely soon to be realized —“ May a *common* be an *uncommon* spectacle in *Caitbness*.”

19. The late scarcities have pointed out the necessity of improving the agriculture and extending the cultivation of the kingdom. In regard to the latter point, there is every reason to hope, that the county of *Caitbness* will not be deficient. A great extent of waste lands have been improved this year in various parts of the district ; and the crops promise amply to repay the expence, more especially on mossy lands. The spirit of enclosing and cultivating wastes is now so prevalent that one gentleman has pledged himself, that he and his tenants shall improve five hundred acres in the course of next year ; and a subscription paper is proposed, to ascertain the quantity which the different proprietors of the county will undertake to improve in the course of next season.

20. As education is the basis of all permanent improvement, it is intended immediately to erect an academy at *Thurso*, where all the principal branches of education will be taught by proper masters. A boarding school for girls has already been established there, and is conducted much to the satisfaction of the town and neighbourhood ; and as *Thurso* will soon rival.

in regard to the important article of education, any town of it's extent in Scotland, that, joined to the cheapness of provisions and other conveniences, must be a great inducement to persons of moderate income to settle there.

It will appear from the preceding enumeration what a variety of important improvements are now carrying on in *Caitbness*, which the late favourable seasons and the high price of the articles which the country produces have greatly tended to promote. In the course of last spring and summer from 400 to 500 labourers came in from the neighbouring counties in quest of work, and hitherto they have all found occupation in building, enclosing, ditching, trenching, road making, and other substantial improvements.

Indeed, such has been the happy situation of *Caitbness* during seasons which have unfortunately borne so hard on other places, that no person either living in it, or who chose to come into it from any of the neighbouring districts, have felt the want either of food or employment.

PREMIUMS OFFERED BY THE MAN-  
CHESTER AGRICULTURAL SOCIETY  
FOR THE YEAR 1801.

*Class I.*

1. **T**o the person, being the owner, who shall set or sow the greatest quantity of land with acorns (not being less than one statute acre) between the first day of May 1800 and the first day of May 1801, and for fencing and preserving the same effectually, in order to raise timber, a silver medal.

2. For the second greatest quantity, a silver medal.

3. To the person who shall plant in the best manner the greatest quantity of land, not less than two statute acres, with oak plants, not exceeding six feet in height, to be properly fenced, between the first day of May 1800 and the first day of May 1801, a silver medal.

4. To the person, being the owner, who shall plant on his lands the greatest number of ash trees, not fewer than five hundred, and effectually fence and secure them, between the first day of May 1800 and the first day of May 1801, a silver medal.

N. B. It is recommended to those who intend to plant ash trees, not to set them in hedge rows adjoining to tillage ground, rich pastures, or meadows; to all which they are extremely prejudicial.

5. To the person, being owner, who shall plant on his lands (as in premium 4.) the greatest number of poplar trees, not being fewer than five hundred, a silver medal.

6. To the person who shall plant the greatest quantity of land, not being less than two acres, between the first day of May 1800 and the first day of May 1801, with larch, willow, alder, birch, and fir trees, including the several varieties of each, and the plants not to be more than four feet asunder, a silver medal.

*Class II.*

1. To the owner and occupier who shall sow not less than five acres of land with wheat in rows, the rows at the distance of not less than nine inches, and who shall keep the intervals cleanest from weeds, a silver medal.

2. To the tenant and occupier who shall sow not less than five acres of land with wheat, (as in premium 1.) and who shall keep the intervals cleanest from weeds, a silver cup, value seven guineas.

3. To the person who shall raise the best crop of wheat from the smallest quantity of seed, on not less than two acres, a premium of a cup, value five guineas.

N. B. Potatoe ground is excluded.

4. To the owner or occupier of any farm who, in proportion to the quantity of his arable land,



shall plough the greatest number of distinct acres, not less than twenty, with any plough that goes with a pair of horses only and without a driver, a silver medal. The Norfolk, Suffolk, and Rotherham ploughs are recommended.

5. To the owner and occupier of any farm who shall plough (as in premium 4.) the next greatest quantity of land, not being less than ten distinct acres, a silver medal.

6. To the tenant and occupier of any farm who shall plough (as in premium 4.) the greatest number of distinct acres, not being less than twenty, a silver cup, value seven guineas.

7. To the tenant and occupier of any farm who shall plough (as in premium 4.) the next greatest number of distinct acres, not being less than ten, a silver cup, value five guineas.

### *Class III.*

1. To the owner and occupier of any farm or parcel of land, not less than forty statute acres, who shall have the pasture lands of his farm laid down, drained, fenced, and improved in the completest manner, a silver medal.

2. To the tenant and occupier of any farm, &c. not less than twenty acres, who shall have the pasture lands of his farm laid down, drained, fenced, and improved in the completest manner, a silver cup, value seven guineas.

3. For the next best, (as in premium 2.) a silver cup, value five guineas.

These will be continued for the next year.

4. To the person, being the owner and occupier, who shall improve the greatest quantity of meadow and pasture land (not usually overflowed in times of flood) by throwing water over it in the most equal and judicious manner, the quantity of land improved not being less than five acres, a silver medal.

5. To the tenant and occupier of any farm, &c. who shall improve the greatest quantity of land, not being less than three statute acres, by floating, (as in premium 4.) a silver cup, value seven guineas.

6. To the tenant and occupier of any farm, &c. who shall improve the greatest quantity of land, not being less than two statute acres, by floating, (as in premium 4.) a silver cup, value five guineas.

N. B. To those who intend to improve their land by floating, Mr. Boswell's Treatise on Watering Land is recommended, price 2s. 6d.

7. To the persons who have received any of the premiums for floating land, and who have since, for five years, kept the drains and water courses made by them for that purpose in the best and neatest manner, and whose lands have been most effectually improved thereby, a silver medal.

8. To the owner and occupier of any farm or

parcel of land, not being less than sixty statute acres, who shall have the same in the neatest and most exact order, as to fences, water courses, water banks, roads, gates, stiles, farm yards, &c. and also the land laid down and drained in the best manner, and cleanest from weeds, a silver medal.

9. To the tenant and occupier of any farm or parcel of land, not being less in quantity than forty statute acres, who shall have the same in the neatest and most exact order, (as in premium 8.) a silver cup, value seven guineas.

10. To the tenant and occupier of any farm or parcel of land, not being less than thirty statute acres, who shall have the same in the neatest and most exact order, (as in premium 8.) a silver cup, value five guineas.

11. To the person who shall discover the cheapest and most productive sort of compost for grass land, a silver cup, value seven guineas.

N. B. No persons will be allowed to claim any of the premiums in this class, from the same lands, who have obtained them in former years, except in premium 7.

12. To the tenant and occupier of any farm who shall raise the greatest quantity of good compost, and shall therewith cover the greatest number of acres, in proportion to his farm, a silver cup, value five guineas.

No one to be entitled to it who shall not improve at least four statute acres of pasture land, which he shall engage not to break up the succeeding year.

13. To the person who shall lay on a quantity of peat earth, with a sufficient mixture of lime, pot ash, soaper's waste, dung, dung water, &c. on not less than five statute acres of pasture land, nor less than thirty tons to each acre, a silver cup, value seven guineas.—And to the person who shall in like manner cover the next greatest number of acres, a silver cup, value five guineas.

N. B. It is recommended to persons desirous of trying the experiment to consult a book lately published by T. B. Bayley, Esq. entitled, 'Thoughts on Manures,' and which may be had from the secretary, and of the booksellers in Manchester.

#### *Class IV.*

1. To the person who shall discover the cheapest and most effectual method of preserving cabbages and turnips through the winter, for spring food for cattle, in the months of March or April, a silver cup, value five guineas.

2. To the tenant or occupier of any farm, &c. who shall, from Martinmas 1800 to May Day 1801, maintain in the best order the greatest number of cattle with turnips, potatoes, or cabbages, with straw only, a silver cup, value seven guineas.

3. To the tenant or occupier of any farm, &c. who shall maintain in the best order (as in premium 2.) the next greatest number of cattle, a silver cup, value five guineas.

4. To the person who shall unroof the great-

est quantity of thatched buildings, and shall cover the same with slate, the quantity not being less than three roods, a silver cup, value seven guineas.

*Class V.*

1. To the ploughman who shall, betwixt the first of May 1800 and the first of May 1801, plough in the best and neatest manner, with any plough that goes with a pair of horses only and without a driver, the number of distinct acres not being less than twenty, (as in premium 4. class II.) five guineas and a pair of buck-skin breeches.

2. For the next best, the number of distinct acres not being less than twenty, (as in premium 1.) four guineas and a pair of buck-skin breeches.

3. To the ploughman who shall (as in premium 1.) plough in the best and neatest manner the greatest number of distinct acres, not being less than ten, two guineas and a pair of buck-skin breeches.

4. For the next best, the number of distinct acres not being less than ten, (as in premium 1.) one guinea and a pair of buck-skin breeches.

5. To the ploughman, carter, or other farmer's man servant, who has the longest served in one place, (not less than ten years) cash, five guineas.

6. To any farmer's woman servant who has the longest served in one place, (not less than seven years) cash, five guineas.

7. To the dairy woman who shall make for sale the greatest quantity of cheese in one year, in proportion to the number of cows, (being not less than twenty) a premium of five guineas, or a cup of that value.

8. To the farmer's apprentice (who has been for the greatest part of his apprenticeship employed in the different branches of agriculture) who shall produce the best character from his master of his diligence, general good behaviour, and improvement in the farming business; in the last three years of his apprenticeship, ending in the year 1801; with a certificate at the foot of the character by the minister, churchwardens, and overseer, or two of them, of the parish or township where such apprentice resides, that they believe such character to be true, three guineas.

9. To a female apprentice to a farmer, serving as above, and producing a similar good character and certificate, three guineas.

10. To the labourer in husbandry renting not more than four pounds a year, by whom the greatest number of legitimate children have been brought up, without relief from any parish or township, seven guineas; for the second greatest number, five guineas; for the third, four guineas.

11. To the person who shall show to the society, at their October meeting, the best long-horned bull, two years old, a silver cup, value ten guineas.

\*12. To the person who shall show to the society, at their October meeting, the best short-horned bull, a silver cup, value ten guineas.

\*13. To the person who shall show to the society, at their October meeting, the best stallion for the general purposes of husbandry, a silver cup, value ten guineas.

\*14. To the person who shall show to the society, at their October meeting, the best ram, cash or a silver cup, value seven guineas.

15. To the person who shall show to the society, at their next October meeting, the best boar, not more than three years old, a silver cup, value five guineas.

Fineness of bone, a small head, short legs, thickness of carcass, and a thin hide, will be deemed points of excellence in a boar.

\*16. To the person who shall show to the society, at their October meeting, the best long-horned heifer, not more than three years old, a silver cup, value ten guineas.

\*17. To the person who shall show to the society, at their October meeting, the best short-horned heifer, not more than three years old, a silver cup, value ten guineas.

*Class VI.*

1. To the owner of the land who, shall effec-

tually drain and reclaim the greatest quantity of wet, spongy, clay, or morass ground, not being less than forty acres, in the most approved manner, a silver medal.

2. To the owner who shall drain the next greatest quantity of ground, (as in premium 1.) not being less than twenty acres, a silver medal.

3. To the tenant and occupier who shall drain the greatest quantity of land, (as in premium 1.) not being less than thirty acres, a silver cup, value seven guineas.

4. To the tenant and occupier who shall drain the greatest quantity of land, (as in premium 1.) not being less than fifteen acres, a silver cup, value five guineas.

5. To the person, being the owner of the land, who shall drain the greatest quantity of wet, spongy, clay, or morass ground, not being less than twenty acres, a silver medal.

6. To the tenant and occupier who shall drain with stone or brick, the greatest quantity of land, not being less than ten acres, a silver cup, value seven guineas.

7. To the tenant and occupier who shall drain the second greatest quantity of land, (as in premium 6.) not being less than five acres, a silver cup, value five guineas.

✎ The manner practised by Mr. Elkington, and suggested by Dr. Anderson, in his *Essays on Agriculture*, vol. I. essay ii. is recommended.

8. To the tenant and occupier who shall drain



the greatest quantity of land with sods in the best manner, not less than twenty acres, a silver cup, value five guineas.

\*9. To the person, being the owner, who shall enclose and improve, in the best and most effectual manner, the greatest quantity of waste and unenclosed land, not being less than ten statute acres, a silver medal.

\*10. To the tenant and occupier who shall enclose and improve the greatest quantity of waste and unenclosed land, not less than two acres, a silver cup, value seven guineas.

*Class VII.*

1. To the tenant and occupier of any farm or parcel of land, not being less in quantity than forty statute acres, who shall make the completest farm yard in every respect, with all proper conveniences for cattle, pigs, &c and so contrived as to raise the best quantity of manure, and to preserve in proper reservoirs the greatest quantity of dung water, either for floating meadows or pastures, or carrying off in water carts: to be finished before the first of July 1801, when the claims must be entered, a silver cup, value seven guineas.

N. B. The society recommend it to those who intend to become claimants for this premium to read Mr. Young's 'Six Months' Northern Tour,' and Mr. Young's 'Farmer's Guide,' upon this subject.

VOL. XXXVII. No. 215. U u

2. To the person who shall invent or improve any implement of husbandry that shall, on trial, be found most useful in saving labour or expence, simplicity and cheapness of construction will be deemed essential parts of it's merits, to be produced to the society, at their general meeting in August 1801, a silver cup, value seven guineas.

N. B. This claim is open to all.

3. To the tenant and occupier of any farm, &c. not being less than sixty acres, who shall make in a substantial, durable manner, the best reservoirs in his farm for the reception of dung water, either for floating meadows or carrying off in water carts, (betwixt June 1, 1800, and June 1, 1801) a silver cup, value seven guineas.

4. For the second-best, the farm not being less than forty statute acres, a silver cup, value five guineas.

5. For the third-best, the farm not being less than twenty statute acres, a silver cup, value four guineas.

6. To the owner or occupier of any farm, &c. who shall in either of the years 1800 or 1801 lay down the greatest quantity of land, not being less than eight acres, for pasture in the best manner and cleanest from weeds, and sown with white clover and grass seeds, a silver medal.

7. To the tenant and occupier of any farm,

&c. who shall lay down the greatest quantity of land, not being less than four acres, for pasture, as in the last premium, a silver cup, value seven guineas.

In almost all the reports of counties, sent to the Board of Agriculture, in London, the using of single-horse carts is strongly recommended not only to the farmers but to the public carriers also. By full experience their utility has been proved; they save a very great annual expence of money, which is necessary to repair the great damages done to the roads by long teams and carriages with heavy weights; and they will also diminish nearly one half of the charge of buying and maintaining the number of horses now used in long teams. The society, therefore, offer the following premiums.

*Class VIII.*

1. To the person who shall produce to the society, at their annual meeting at Altrincham, 1801, a one-horse cart which shall then be most approved for the strength, lightness, and cheapness of it's construction, and for it's general fitness to be used both in the fields and on the roads, the sum of five guineas.

2. To the public carrier who shall employ the greatest number of one-horse carts, not less than three, nor carrying more than one ton each, (and proportioned to the amount of goods

conveyed by such carrier) betwixt the first of November 1799 and the 29th of September 1801, a silver cup, value seven guineas.

3. To the public carrier who shall employ the next greatest number of single horse carts, (as in premium 2.) a silver cup, value five guineas.

4. To the owner and occupier of any farm, &c. who, in proportion to the size of his farm, and the usual number of draught horses worked in it, not being less than three, shall employ the greatest number of single horse carts in his husbandry business, (as in premium 2.) a silver cup, value seven guineas.

5. To the tenant and occupier of any farm, &c. who, in proportion to the size of his farm, and the usual number of draught horses worked in it, shall employ the greatest number of single horse carts in his husbandry business, (as in premium 2.) a silver cup, value seven guineas.

6. To the tenant and occupier of any farm, &c. who shall employ the next greatest number of single horse carts, (as in premium 4.) a silver cup, value five guineas.

7. To the owner and occupier of any farm or parcel of land, adjoining to a river, who shall, in the most effectual manner, secure the greatest length of the bank of such river, (proportioned to the force of the stream and the depth of the bank) so as to prevent the earth from being

washed away by the violence of the stream, a silver medal.

8. To the tenant and occupier who shall secure as in premium 7.) the greatest length of bank, a silver cup, value seven guineas.

9. To the owner and occupier of any farm, &c. adjoining to a river, who shall confine the water within proper bounds, and prevent the damage that might be done by it's overflowing the fields upon it's banks in the time of inundation, a silver medal.

10. To the tenant and occupier who shall confine the water as in the last premium, a silver cup, value seven guineas.

It is recommended to those who intend to undertake any work of this kind, and who can conveniently do it, to view the improvements made upon the banks of the river Tame, at Shepley, near Ashton under Line; and also to read Dr. Anderson's Essays relating to Agriculture, in 2 vols. 8vo.

11. To any person who shall search for and discover, in any of the lands within the circuit of this society, the best and largest bed or vein of hard stone or gravel, for making and repairing roads, a silver cup, value seven guineas, or the money, at his option.—For the second-best, a silver cup, value five guineas, or the money.—For the third-best, three guineas.

12. To the owner who shall plant the greatest length of white-thorn hedge, betwixt the sixth day of October 1800 and the first of May

1801, in old fences, and not being less than two hundred perches, after the most-approved methods, a silver medal.

13. To the tenant and occupier who shall plant the greatest length of white-thorn hedge, as in the above premium, not being less than one hundred perches, after the most-approved methods, a silver cup, value seven guineas.

14. To the owner and occupier of any farm or parcel of land who shall plash the greatest length of fence in the neatest and best manner, the quantity not being less than one hundred perches, a silver medal.

15. To the tenant and occupier of any farm who shall plash the greatest length of fence in the best manner, the quantity not being less than one hundred perches, five guineas, or a cup of that value.

16. To the cottager who shall, before the first of September 1801, raise the greatest number of stocks or hives of bees, not being fewer than ten, five guineas.

The premiums marked thus \* are new ones.

AVERAGE PRICES OF CORN FOR  
OCTOBER 1801.

*By the Standard Winchester Busbel of 8 Gallons.*

COUNTIES INLAND.

	Wheat.		Barley.		Oats.		Beans.	
	s.	d.	s.	d.	s.	d.	s.	d.
London,	9	9	5	11	3	9	5	4
Middlesex,	9	5	5	8	4	1	5	10
Surry,	9	11	5	8	4	10	5	2
Hertford,	9	3	5	9	3	5	6	0
Bedford,	9	3	6	2	3	7	6	1
Huntingdon,	9	0	5	2	2	7	4	7
Northampton,	9	9	5	5	3	0	6	1
Rutland,	10	6	6	6	2	11	5	6
Leicester,	10	6	5	8	3	0	5	10
Nottingham,	10	10	7	0	3	5	6	6
Derby,	11	4	7	5	4	1	7	1
Stafford,	10	8	6	8	3	11	7	2
Salop,	9	10	7	2	4	4		
Hereford,	10	3	5	11	3	4	5	7
Worcester,	10	10	6	0	5	2	6	8
Warwick,	10	0	6		3	11	7	3
Wilts,	8	9	5		3	11	7	3
Berks,	8	10	4	7	4	0	5	8
Oxford,	9	2	4	10	3	7	5	11
Bucks,	9	0	5	1	3	11	5	6
Brecon,	10	5	5	7	2	6		
Montgomery,	9	0	6	0	2	6		
Radnor,	9	9	6	1	3	8		

MARITIME COUNTIES.

Essex,	8	11	5	6	4	4	4	7
Kent,	9	3	5	3	3	7	4	9
Sussex,	10	3	4	0	4	1	5	7
Suffolk,	9	7	5	7	3	7	4	7
Cambridge,	10	0	4	10	2	6	4	5
Norfolk,	9	0	5	7	3	4	4	3
Lincoln,	10	1	6	9	3	0	5	10
York,	9	5	6	2	2	11	6	5
Durham,	8	4	4	9	2	4		

	<i>Wheat.</i>		<i>Barley.</i>		<i>Oats.</i>		<i>Beans.</i>	
	s.	d.	s.	d.	s.	d.	s.	d.
Northumberland,	7	11	3	40	2	9	—	—
Cumberland,	10	1	5	11	3	8	—	—
Westmoreland,	10	9	5	5	3	6	—	—
Lancaster,	9	11	5	7	3	6	5	2
Chester,	9	2	—	—	3	7	6	3
Flint,	10	6	7	5	5	6	—	—
Denbigh,	10	7	7	9	3	3	—	—
Anglesea,	—	—	5	0	—	—	—	—
Carnarvon,	10	2	6	0	3	8	—	—
Merioneth,	10	0	6	3	2	3	—	—
Cardigan,	9	2	5	3	1	10	—	—
Pembroke,	9	11	5	4	2	5	—	—
Carmarthen,	9	11	5	11	2	2	—	—
Glamorgan,	10	6	6	3	2	9	—	—
Gloucester,	10	3	5	9	3	8	6	7
Somerset,	10	2	5	11	3	9	7	2
Monmouth,	10	3	6	3	2	7	—	—
Devon,	10	10	5	7	3	2	—	—
Cornwall,	10	10	5	3	2	8	—	—
Dorset,	10	2	5	11	3	8	6	3
Hants,	10	1	5	6	3	6	6	10
General average,	9	11	5	10	3	3	5	11
July	16	10	8	10	4	8	7	8
Aug.	15	2	7	6	4	5	6	11
Sept.	11	1	6	3	3	8	6	4

END OF VOL. XXXVII.

Bury: Printed by J. Rackham, Angel Hill.









Princeton University Library



32101 050593878

